MARCH 1951

The American City

Spring implies "spruce up" and gives alert municipal officials an opportunity to plug for better civic cooperation in refuse and street-cleaning sanitation. An article discussing clean-up campaigns appears on pages 104 and 105 of this issue.

Whether it's U.S. Route 1--

Heavy-duty Texaco Asphaltic Concrete pavement on U. S. Route 1 at Westport, Conn., constructed by the State using asphalt mix supplied by Leverty and Hurley, Brigeport, Conn.

or a city's busiest streets

Broad Street, one of the main thoroughfares of Elizabeth, N. J., also is served by resilient, joint-free Texaco Asphaltic Concrete.

—the pavement which takes punishing impact with low upkeep is resilient, heavy-duty Texaco Asphaltic Concrete

U. S. Route 1, which stretches from Maine to Florida, is one of the principal links in America's highway network. Throughout its length, it is subjected to heavy traffic, including a large proportion of trucks moving freight up and down the east coast. The top photo shows one of a number of sections of US-1, which have been paved with resilient, heavy-duty Texaco Asphalt.

To the municipal official, there is a point worth considering in the successful performance of Texaco Asphalt paving under the kind of traffic served by US-1. Here is a type of paving which can be counted upon to deliver lasting service with low upkeep on any city's busiest streets. Keep in mind, too, that streets in more than 1,500 representative American cities have been paved with Texaco during the past 45 years.

Thanks to their resilience, Texaco-paved streets reduce the shock of traffic impact by absorbing it. Their flexibility enables them to maintain contact with, and retain full support of, the foundation. Chemicals used for ice control in winter have no harmful effect. High summer temperatures cause no damage due to expansion.

Helpful information on the various types of Asphalt construction suitable for city streets is presented in two Texaco booklets. Copies may be secured by writing our nearest office.

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TEXACO

REG. T.M.

TEXACO ASPHALT

Index to Contents of This Issue

(ANNUAL INDEX TO CONTENTS for 1950 free on request)

BOND MARKET
Cities Benefit from Low Interest Rates.. 127
CITIZENS AND GOVERNMENT
The City Tells Its Story.....114c
CIVIL DEFENSE
Plans Changed on Civil Defense Shelters 7
How Shall Injured Volunteer Civil-Defense Workers Be Compensated?..... 86
Civil-Defense Spotlight on Municipalities 87
Civilian Protection Group Expands Activities 97
Defense Mobilization Organization Chart 108
First-Aid Training for Civil Defense.... 108
CONFERENCES AND CONVENTIONS
National Housing Policy Conference.... 7
New York Association of Towns Meets... 145
Conventions—When and Where..... 147
CONSTRUCTION
Municipalities and Federal Controls..... 5
CONTESTS
To Spur Youth Participation in Community Affairs 161
COUNCIL-MANAGER PLAN
Recent City Manager Appointments..... 145
City Manager Vacancy in Kalamazoo.... 161
FINANCE AND TAXATION
Policies for Finance Officers in the Present Emergency 9
Effective Public Relations in Dyersburg Makes the Most of a Capital Budget.. 114d
Cities Benefit from Low Interest Rates... 127
GARDENS
Importance of Home Gardens in Defense Effort 5
HIGHWAYS
U. S. Chamber of Commerce Urges Full Maintenance of Highways 92
HOUSING
Housing and Redevelopment to Receive Continued Attention 5
New York's Redevelopment Plans 7
Inter-Professional Collaboration Urged... 92
New York City Sets the Pace in Integrating Public and Private Redevelopment Plans 96
Progress Against Housing Discrimination 107
LAWS AND LEGAL DECISIONS
How Shall Injured Volunteer Civil-Defense Workers Be Compensated? 86
Zoning and Planning Notes 129
Legal Notes and Decisions..... 131
LIGHTING, OUTDOOR
New Lighting on Oahu 139
Philadelphia Now Owns Over 9 Miles of Mercury-Vapor Lights 139
Fluorescent Lights in Detroit 141
Gas Lamps Disappear from Nahant, Mass. 141
"The Best-Lighted Streets in the Commonwealth of Virginia" 142
MUNICIPAL NEWS BREVITIES
Municipal News Brevities 124
NEWS AND ILLUSTRATIONS
Items from Manufacturers 163
PARKS
Planning Parks and Recreation..... 100
PERSONNEL
Farmington, Conn., Adopts Unusual Cost-of-Living Pay Plan 121
PEST CONTROL
Fly Program Uses BHC for Insecticide.. 7
PLANNING AND ZONING
New York's Redevelopment Plans 7
New Towns for American Defense..... 87
New York City Sets the Pace in Integrating Public and Private Redevelopment Plans 96
Zoning and Planning Notes 129
POPULATION
Urbanized Areas in the United States.... 108
POWER
Diesels Plus Good Management..... 123
PUBLIC RELATIONS
The Advertising Council at Your Service 9
"Know Your Neighbor," Theme of University City's Annual Community Conference 85
The City Tells Its Story 114c
Effective Public Relations in Dyersburg Makes the Most of a Capital Budget.. 114d
PUBLIC SAFETY
Fighting Crime and Fire in Pueblo, Colo. 17
Two New Fire Stations for Phoenix, Ariz. 17
Street Box Lights: Amber, Fire Alarm, and Blue, Police Call..... 117
PUBLIC WORKS PROGRAMS
Municipalities and Federal Controls..... 5
PURCHASING
The Wheels of a City Must Turn..... 103
QUIZ
THE AMERICAN CITY Quiz 5
RECREATION
Recreation in Times of Stress..... 5
Planning Parks and Recreation..... 100
Mid-Century Recreation Congress..... 102
REFUSE COLLECTION AND DISPOSAL
Louisville, Ky., Landfill..... 19
South American Sanitation..... 19
The Elements of Refuse Collection and Disposal 83
Sanitary Landfill or Incineration?..... 98
Some Effects of Home Garbage Grinding Upon Domestic Sewage..... 110
Electric Power from the Garbage Dump 114b
SEWERAGE AND SEWAGE TREATMENT
Wartime Economy Must Include Sanitary Measures 15
Tennessee Studies Sewage Treatment Costs 15
World Health Seminar on Environmental Sanitation 15
Cincinnati Builds to Meet a Pollution Abatement Standard 88
Some Effects of Home Garbage Grinding Upon Domestic Sewage 110
SMOKE ABATEMENT
St. Louis Counts Its Gains in Smoke Abatement Studies 89
STREET CLEANING
Five Times Faster Than a Man and a Broom 13
Larchmont's Leaf-Gathering System..... 13
Do Clean-Up Campaigns Pay Off?..... 104
STREET CONSTRUCTION AND MAINTENANCE
How Maintenance Costs Have Risen..... 21
How to Patch Concrete Pavement..... 21
Catch-Basin Design Aids Base Compaction 21
How to Smooth Out the Waves in Streets 93
Lewiston, Idaho, Repaves and Cuts Costs 80% 94
The Wichita Driveway Ordinance..... 118
SWIMMING POOLS
Are Indoor-Outdoor Swimming Pools Practicable? 112
TRAFFIC CONTROL AND FACILITATION
550 Propane Buses for Chicago..... 133
Car-Travel Time Cut One-Third..... 133
Rapid Transit Comes to Cleveland..... 133
Bob Mitchell Becomes a Consulting Engineer 135
Improving Traffic Flow in Our Cities..... 135
Metered Parking at Savannah Beach, Ga. 135
Special Metering in Saskatoon..... 135
400 New Parking Meters on Seal Beach.. 137
Honor System Parking Lots in Greensboro 137
URBAN REDEVELOPMENT
Housing and Redevelopment to Receive Continued Attention 5
New York's Redevelopment Plans..... 7
New York City Sets the Pace in Integrating Public and Private Redevelopment Plans 96
Redevelopment in the National Emergency 121
VOTING MACHINES
Old-Style Voting Too Slow for Phoenix.. 147
WATER SUPPLY AND TREATMENT
Concordia Water Bill..... 11
Frost Penetration 11
How Pennsylvania Authorities Charge for Water Extensions 11
Swimming-Pool Chlorination 11
Every Square Foot Counts 90
How Big Creek Came to Mobile..... 106
Loiza Water Filter Plant Typifies Puerto Rico Today 114

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See pp. 23, 25, 26, 28, 29, 34, 149, 151, 153, 155, 157 for catalogs and publications on municipal subjects.

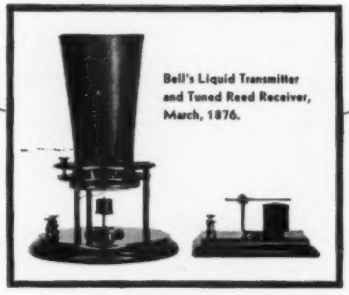
List of Coming Conventions, page 147

Index to Advertisers, page 218

Copies of this issue printed, 21,500

75th Anniversary of the Birth of the Telephone

1876 ☆ 1951



Bell's Liquid Transmitter and Tuned Reed Receiver, March, 1876.

Suppose the telephone had never been invented

Have you ever thought what the world and your life would be like without the telephone?

If you wanted to talk to relatives or friends — if you wanted to order from a store — if you needed to summon a doctor or a policeman in an emergency — there would be no way you could do it in a hurry. What now takes only a few seconds or minutes would often take hours and cost you far more than a telephone call.

Each year the telephone becomes more useful to the people and more vital to the prosperity and security of the Nation. Today's tremendous job of production and defense could not be carried on without it.

There are twice as many Bell telephones as there were only ten years ago. They are here and ready because the Bell System kept right on building and improving to meet the country's needs.

Never in the history of the telephone has it been so valuable to so many people as right now.

BELL TELEPHONE SYSTEM

Our Municipal Notebook

To The American City
From Two Federal Officials

Housing and Redevelopment to Receive Continuing Attention

To the Editor of THE AMERICAN CITY:

THE President's budget puts a limitation of 37,500 dwelling units on construction starts under the federally aided low-rent housing program for the six-month period beginning January 1, 1951, and for subsequent six-month periods unless some change in this figure becomes necessary.

With respect to the question of materials for redevelopment projects, broader decisions than those under my own authority would be involved. Such undertakings would obviously be subject to any general controls affecting construction. To the extent that such redevelopment projects contribute to defense-area needs, they would, as a matter of general policy, benefit from any preferences accorded to defense-related undertakings as compared with strictly non-defense construction, but such preferences would not automatically result solely from the fact that they represent a continuation of a long-range redevelopment plan.

I do want to assure you that it is our policy and earnest desire to enable the Title I program to continue to advance to the fullest extent that is possible, consistent with or contributing to requirements for our national defense and security, and that the low-rent public housing program should continue to represent a reasonable proportion of the housing that we can continue to build for our general requirements. We also feel that local communities should continue to press forward vigorously towards the basic improvement and redevelopment of their cities, unless defense necessities force an interruption, and should remain ready to carry beyond that point as soon as conditions permit.

RAYMOND M. FOLEY
Administrator
Housing and Home Finance Agency

Importance of Home Gardens in Defense

To the Editor of THE AMERICAN CITY:

THIS nation is mobilizing its military and economical strength to defend our free and democratic way of life. In this defense effort, home gardens can make a real contribution.

A good diet is a vital factor in good production. Nutritious food is translated into vigor and efficiency. It keeps producers on the job by protecting their health. The value of home-garden production in improving diets, especially of those city families with limited food budgets, is therefore obvious.

But even beyond this, a home garden helps to overcome poor food habits and lack of knowledge of good nutrition among many families that have ample money to spend for food. It has been well demonstrated that families taking up gardening often develop a taste for vegetables and fruits that permanently affects their consumption habits.

I urge municipal officials and citizens' organizations to stimulate expanded home-garden programs, both as a means of improving nutrition and to provide more adequate reserves of essential foods to meet any emergencies that might arise.

People in the cities who are unable to procure space for home gardening, can achieve some of the same results by becoming active in the program of home and community food preservation. By purchasing and canning fresh products when temporary over-supplies are available in the markets, they will help hold down their own food costs, check inflationary pressures, and make better use of abundant food supplies.

The success of this year's gardening and food-preservation program will contribute to the strength and security of our entire nation.

CHARLES F. BRANNAN
Secretary of Agriculture

Public Recreation In Times of Stress

IN TIMES of stress there is urgent need for an occasional hour of relaxation and recreation.

This applies both to the civilian population and to the men in the training camps.

Along with our preparedness for defense, therefore, our cities must plan for preparedness for play. And as the defense "emergency" seems likely to last for years, municipal officials have both an immediate and a long-term job to do in the recreation field.

In this connection readers of THE AMERICAN CITY will gain some helpful ideas, we believe, from the comprehensive two-part article which begins on page 100 of the present issue.

Municipalities And Federal Controls

WITH the rapidly mounting tempo of the national mobilization effort, municipalities are not escaping unscathed from the impact of economic controls on the entire economy.

● *Construction Ban.*—The National Production Authority ban on construction (M-4 amended) applies to municipalities, and requires authorization to begin construction of community buildings and office buildings (including city halls and struc-

The American City Quiz

Match Wits with the Experts

QUESTIONS

1. ***Is the purification of sewage for use in domestic water supply feasible?***
2. ***On a population basis, how much power can be expected from sludge gas in a sewage-treatment digester?***
3. ***What public-health factors enter into the use of sewage sludge for soil conditioning?***
4. ***What are the most effective colors for fire-fighting equipment?***
5. ***What is the chief obstacle standing in the way of successful fly-control?***
6. ***What are the proved facts of the relationship between air pollution and public health?***
7. ***How can one prevent corrosion in sewers carrying sewage of high sulphide content?***
8. ***What measures can be adopted to combat the Dutch elm blight, which has been attacking so many elm trees throughout the country?***
9. ***What is the smallest city to operate its own municipal asphalt plant?***
10. ***Where is the greatest number of examples of the use of sodium fluoride in water supplies for dental-health measures?***
11. ***What can be done to improve the effectiveness of fog as a fire-fighting tool?***
12. ***Under what circumstances should "Walk — Wait" traffic signs be used?***

(Answers on page 9)

HYSTER...One of the Oldest Names in Tractor Equipment

29 Hyster Tractor Tools

. . . include a complete line of winches, yarders, donkeys, cranes, logging arches and sulkies; Grid Roller for bituminous road salvage; and Hystaway, the 5 in 1 tool that includes dragline, clamshell, crane, shovel and backhoe.

Hyster Tractor Tools make money for their owners in construction, logging, oil fields, road work, and in many branches of general industry.

For 22 years Hyster has made tractor tools for use with Caterpillar track-type tractors. Mounted on the big yellow machines, dependable Hyster tractor tools are at work on the roughest, toughest jobs all over the world.

Hyster tractor tools are sold and serviced by more than 400 Caterpillar-Hyster dealers around the globe.

The Grid Roller, Hyster's newest tractor tool, which is revolutionizing bituminous road salvage. Used with Caterpillar motor graders and Caterpillar DW10 and track-type tractors.

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tures for recreational use). Exempt from control are construction projects not costing over $5,000, and all regular maintenance and repair work, including reconstruction of disaster-destroyed buildings. Reports indicate that thus far, at least, the order has been liberally interpreted for public construction. The NPA's Construction Controls Division, 801 E St. NW., Washington 25, D. C., has forms (NPAF-24) to apply for authorization, as do regional and district offices of the Department of Commerce.

● *Chlorine Order.*—A control order on manufacture of chlorine has been issued by the National Production Authority which is designed to insure that there will be adequate supplies for municipal water purification and for sewage treatment. The order (M-31) requires producers and distributors to fill municipal orders in amounts equal to their 1950 purchases. However, they are not required to deliver more than 25% of this amount in any month. The order made no reference to chlorine for swimming pools.

● *Wage and Price Controls.*—On the brighter side is the order of the Wage Stabilization Board (General Reg. 4) that wage controls are inapplicable to state and local governments. Also, price controls do not affect the service charges or fees levied for services such as transit, water, light, sewer, garbage collection, toll bridges, or other utility rates charged by municipal governments.

● *Priorities.*—Municipalities have been reporting increased difficulty in obtaining such items as air-raid sirens, steel, pipe and valves, copper tubing, electrical apparatus, tools, soda ash, and other items without priorities. The National Production Authority is due to establish a Division of Government and Public Services in the Office of Civilian Requirements to handle allocations and priority matters for municipalities. The sooner the better, most municipal officials say.

National Housing Policy Conference, March 19-20

TO HELP in defining a wise national housing policy in the light of a semi-wartime economy, a National Housing Policy Conference will be held in St. Louis, Mo., March 19 and 20.

This approach to the task of relating the Federal Housing Act of 1949—public housing, slum clearance, and urban redevelopment—to the nation's security effort is being sponsored by a group of St. Louis businessmen, professional, labor, and civic leaders. Chairman of the Conference is Gale F. Johnston, president of the Mercantile-Commerce Bank and Trust Company of St. Louis. Mayor Joseph M. Darst, of St. Louis, is Honorary Chairman.

Persons wishing to reserve accommodations or desiring additional information are invited to write to Thomas F. Kelleher, Conference Director, Room 221, Hotel Jefferson, St. Louis 1, Mo. The Jefferson is the Conference headquarters.

Plans Changed on Civil-Defense Shelters

THE federal civil-defense-shelter program is undergoing substantial modification and revision, apparently in response to the many objections raised to the original proposals by various public and private groups. On February 18, Millard F. Caldwell, Civil Defense Administrator, reported, in an interview, that the Government has dropped as "not practical" most of its plans for big underground atomic-bomb shelters which could serve as parking garages in peacetime. Maximum efforts will be made instead to strengthen existing structures which could be converted into shelters, and to encourage family-type shelters.

Mr. Caldwell's remarks coincided with the release of a report by the New York Chapter of the American Institute of Architects which severely criticized the proposal advanced in New York City to build dual-purpose bomb shelters to cost a total of $450,000,000. The architects pointed out that the proposed garages would be too large for bomb shelter and too distant from one another to relieve downtown parking conditions. Even if the garages held no automobiles, the architects pointed out, it would be impossible to fill them up within the eight minutes usually given as the interval between a warning and the actual raid.

Aiken, S. C., Fly Program Uses BHC for Insecticide

AIKEN County, S. C., has the distinction of being the first in the country to carry out a concentrated fly-control program with the use of benzene hexachloride. Results from this initial program have been encouraging, according to William S. Jones, senior sanitarian of the Aiken County Health Department.

The spraying operation utilized manually-operated compression sprayers that went from house to house. The benzene hexachloride formula, commonly known as BHC, was used because of the ability of flies and other insects to develop immunity to DDT and similar fly killers.

The choice of BHC was made following tests with other insecticides. Some, like chlordane, Mr. Jones found, were ineffective; others, like methoxychlor, were both expensive and still not sufficiently effective to achieve the desired results.

The first trial run of BHC was in Mr. Jones' own home. When he was personally convinced of its effectiveness, he recommended its use throughout the county.

Besides using the manual, compression-type sprayers, the Health Department also uses a sprayer-duster turbine mounted on a Jeep for "fogging" larger areas. By the end of the year, more than 6,000 homes will have been treated.

The benzene hexachloride being used is a product of the Pennsylvania Salt Mfg. Company, of Philadelphia, and is a wettable base product made from the firm's 36% Gamma Isomer technical grade BHC. It is distinctive in that it is purified to reduce the objectionable odorous properties of the chemicals.

Another Look At New York City's Redevelopment Plans

THOUGH THE AMERICAN CITY is convinced of the scope and imaginative approach of the redevelopment proposals of New York City's Committee on Slum Clearance Plans, publication of the article on page 96 of this issue raises other questions.

Some of the proposed projects have been criticized because of their piecemeal character, high density, and limited variety of proposed land use and building type. But in Washington Square South other problems pose a unique challenge to citizen groups and the City Planning Commission.

Proposed for wholesale demolition and rebuilding are several blocks of Greenwich Village—a district throbbing with community life and activity. It is literally the "Latin Quarter" of our greatest metropolis. A goodly amount of renovation and rehabilitation has taken place within it during the past decade. The area's considerable human, as well as financial, value is reflected in the figures which show land acquisition costs ranging from $14.16 to $19.54 per square foot, compared with land costs of $3 to $4 per square foot for three other proposed redevelopment projects.

Rehabilitation Possibilities And Site Selection

Perhaps greater attention should be given to rehabilitation possibilities for more of the buildings in this particular section. On the other hand, sections of the western edge of Greenwich Village, close to the docks, have needed both extensive replanning and low-rent housing for decades, but the current proposals make no mention of this area.

There is great merit in the technical planning approach represented by the Washington Square South proposals, but it remains to be seen, in terms of community opposition and resentment, how much the more intangible factors, such as social organization, need to be weighed. New York City should be able to overcome the hurdles that have toppled large-scale redevelopment schemes elsewhere. But before negotiations with prospective investors are completed, public hearings should be held to allow for the expression and consideration of critical viewpoints. These may, after all, lead to constructive and beneficial changes in the design and concept of some of the redevelopment areas. As indicated on page 5 by Housing and Home Finance Agency Administrator Raymond H. Foley, no wholesale curtailment of redevelopment activity is contemplated at this time. Now is a good time to get on with all preliminaries.

Clean pipe thoroughly — then center brass band over break, bending tab back to lock.

Thoroughly soap both sides of gasket and pipe with heavy soap water.

Center gasket and Monel Band over brass band.

Assemble halves of clamp over pipe and bolt together.

Insert pull bolts and tighten all around evenly.

REPAIR BROKEN MAINS

IN 5 TO 15 MINUTES one man can install a Skinner-Seal Split Coupling Clamp—make a dependable, lasting repair. Built to outlast the main. Tested to 800 lbs. Be prepared — order today. M. B. Skinner Co., South Bend 21, Indiana, U.S.A.

SKINNER-SEAL SPLIT COUPLING CLAMP

The Advertising Council At Your Service

MUNICIPAL officials and civic leaders are afforded an exceptional means of aiding local public-service campaigns through a new service begun last month by The Advertising Council, Inc. This is a bi-monthly free Newspaper Mat Service, available for all daily and weekly newspapers in the United States. The March-April edition includes new advertisements for eight vital campaigns, prepared by expert advertising agencies and designed to help step up mobilization and national unity.

Subjects featured in the first edition of the Mat Service are: "1951 Red Cross Fund," "Stop Accidents," "Prevent Forest Fires," "Better Schools," "Armed Forces," "C.A.R.E.," "America's Defense Bonds," and "America's Economic System."

To mayors, city managers, and citizen groups wishing to aid in these fields of civic concern, THE AMERICAN CITY suggests consultation with local newspaper publishers, urging the use of these ably written advertisements and their proper timing to fit in with local public-service campaigns during 1951.

If your newspapers do not have the March-April kit of advertisements on file, you can secure a set without charge by writing to Maxwell Fox, Public Relations Director, The Advertising Council, Inc., 25 West 45th St., New York 19, N. Y.

Policies for Finance Officers In the Present Emergency

THE Executive Board of the Municipal Finance Officers Association has issued a statement of Recommended Policies for Municipal Finance Officers. Among the nine categories of recommendations made, the following seem to THE AMERICAN CITY to merit special emphasis:

Revenues: Local governments (1) should be prepared to seek revenue sources other than those which now are utilized, in order to close the gap between revenues and expenditures that may exist by reason of changing policies of taxation at the federal level; and (2) should forthwith consider the inflationary aspects of an expanding economy and prepare budgets accordingly.

Expenditures: As a minimum, local governments, states, and provinces should take the following steps:

1. Survey present operations, with emphasis on seeking methods for retrenchment in expenditures to reduce costs
2. Adopt the best modern budget procedures and practices
3. Budget appropriations carefully
4. Have a reasonable expectancy that revenues will be realized to cover the expenditure of funds before commitments are incurred
5. Consider the factor of a possible restricted material market, and plan only the most essential services and capital improvements consistent with the safety, health, and basic welfare of inhabitants

Taxation: Further efforts should be made by local governments in cooperation with state or provincial tax administrative agencies for continued improvement of tax laws and administration, particularly in the fields of assessment and tax collection.

Debt and Debt Administration: Serious consideration should be given to the implication of continued high prices and costs of capital improvement. New debts should be created only for essential projects which have been designed and for which construction will proceed. Current borrowings should be at a minimum.

Personnel and Public Employee Retirement: Public administrators must recognize that false economies could result from failure to meet competitive rates of compensation for services performed by efficient and competent employees. More attention should be given to administrative supervision and to training employees. Local government employees should be covered under well-formulated retirement plans.

The American City Quiz

ANSWERS TO QUESTIONS ON PAGE 5

1. Apparently there is a growing trend of thought on the part of sanitary engineers that it is. Dr. Karl Imhoff, famous German authority on the subject, has stated that the cyclic reuse of purified sewage is feasible if the top figure does not exceed 10 cycles. Beyond that, the dissolved solids would increase so that they would be dangerous to the human system. A M Rawn, Chief Engineer of the Los Angeles County Sanitation Districts, has indicated the feasibility of reclaiming purified sewage by returning it to the ground, thus replenishing the groundwater supply in the Los Angeles area.

2. According to W. B. Walraven, District Engineer, Springfield, Ill., Sanitary District, sewage from 500 people will yield sludge gas to power one horsepower of engine capacity. He states that in Springfield sludge digestion is economical from a standpoint of power production alone.

3. Neither raw nor digested sludge applied to soil as a conditioner or fertilizer is dangerous from a health standpoint, according to experiments made by the New Jersey Agricultural Experiment Station. Vegetables fertilized without sludge, with raw sludge, with digested sludge, and with animal manure, show no difference in coliform organisms. Amoeba cultures applied to vegetables disappear in a few days. The tests were conducted under the direction of Dr. Willem Rudolfs.

4. Here and there throughout the country, the historic red color seems to be changing to white. Winthrop, Ill., and Essex Fells, N. J., are recent examples. White is more easily noticed, particularly at night.

5. According to Joseph H. Coffee, U. S. Public Health Service, Atlanta, Ga., inadequate facilities for garbage storage and disposal are the chief obstacle in the path of successful fly-control operation. DDT is a temporary measure. Permanent control must attack the breeding places.

6. The proved facts are less dramatic than it ordinarily appears. Dr. A. J. Lanza, Chairman of the Institute of Industrial Medicine, New York University, reports that medical research does not support the contention that air pollution causes cancer of the lungs. Pittsburgh, for example, had fewer cases than many cities less smoky. Smoke is a nuisance and economic loss, but cannot cause specific disease or death in light of present evidence.

7. Vitrified-clay pipe is one way. The protection of concrete pipe is another. One effective protective measure is the use of a high polymer vinyl chloride resin in the form of a plastic liner. The liner, known as T-Lock Amerplate, made by the Amercoat Corp., South Gate, Calif., can be cast into the concrete when constructed. It is impervious to gas and a wide variety of chemicals, and is unaffected by humidity or oxidation.

8. A new compound known as Caralate, developed by the Rhode Island Agricultural Experiment Station and the Bartlett Tree Research Laboratories, appears able to suppress Dutch elm blight in healthy trees. It is applied directly to the soil by surface or subsurface irrigation. The Buisman elm appears resistant to the blight and is, therefore, useful in new plantings.

9. Apparently, Lamar, Colo., population 8,500, holds the record. This city operates a Barber-Greene hot-mix asphalt plant rated at 25 tons per hour. The resurfacing program amounts to about 200 blocks per year, laid with an Adnun paver. George Russell, City Engineer, has charge of the work.

10. Wisconsin leads in fluoride use. A year ago, 10 cities in that state adopted the program, and 28 cities were about to. In the rest of the country only 13 cities had taken the step at that time.

11. According to Earle M. Scott, Scott Aviation Corp., Lancaster, N. Y., a combination of fog and water with a wetting agent is superior to straight fog. But fog is superior to straight water.

12. The "Walk—Wait" pedestrian control should be used on streets 50 feet and wider, according to T. J. Seburn, Traffic Engineer, Kansas City, Mo., and the machine should be used to allow pedestrian traffic in all directions for certain intervals.

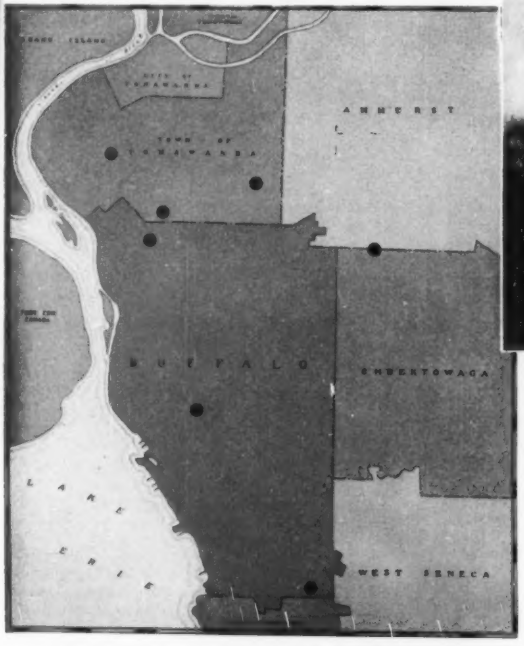
Send in your suggested questions with the answers on municipal topics for use in this feature. THE AMERICAN CITY will make a small payment for each question accepted.

NOW SEVEN HORTON TANKS SERVE THE BUFFALO AREA

For better daily water service throughout an area of over 70 square miles, Metropolitan Buffalo relies on seven large Horton elevated tanks. The result has been —higher water pressures—lower pressure variations—complete dependability—and, above all, customer satisfaction.

Pictured on the right is a 1,000,000-gallon tank in Tonawanda. Its modern radial-cone bottom is ideal for large capacity installations because tanks of this type can be built with a low range in head—thus substantially reducing pumping costs.

Horton elevated water tanks with radial-cone bottoms are built in standard capacities from 500,000 to 3,000,000 gallons. Write our nearest office for information or estimating prices.



LARGE HORTON ELEVATED TANKS IN THE BUFFALO AREA

- **TOWN OF TONAWANDA**
  Two 1,000,000-gallon tanks
- **KENMORE**
  One 1,000,000-gallon tank
- **CLEVELAND CHEEKTOWAGA**
  One 1,000,000-gallon tank
- **BUFFALO**
  Three 2,000,000-gallon tanks

CHICAGO BRIDGE & IRON COMPANY

Atlanta 3	2114 Healey Bldg.	Detroit 26	1501 Lafayette Bldg.	Salt Lake City 4	501 West 17th South St.
Birmingham 1	1502 North Fiftieth Street	Houston 2	2101 National Standard Bldg.	San Francisco 11	1533—200 Bush Street
Boston 10	1002—201 Devonshire St.	Los Angeles 17	1503 General Petroleum Bldg.	Seattle 1	1301 Henry Bldg.
Chicago 4	2127 McCormick Bldg.	New York 6	3308—165 Broadway Bldg.	Tulsa 3	1625 Hunt Bldg.
Cleveland 15	2236 Guildhall Bldg.	Philadelphia 3	1616—1700 Walnut Street Bldg.	Washington 6, D. C.	Cafritz Bldg.

Plants in BIRMINGHAM, CHICAGO, SALT LAKE CITY and GREENVILLE, PENNSYLVANIA

Water Supply and Treatment

CITY WATER DEPARTMENT
CONCORDIA, KANSAS **JANUARY 1, 1951**

Payable without additional charge on or before January 10, 1951
MAIL THIS STUB

WATER RATES: First 600 cu. ft. $1.00; Next 3,000 cu. ft. $1.25 per M; Next 20,000 cu. ft. $1.00 per M; Excess $ .75 per M
BRING THIS CARD WITH YOUR REMITTANCE

PRESENT	PREVIOUS	QUANTITY CONSUMED	AMOUNT & MISC CHARGE	TAX & CREDITS	TOTAL DUE

NEW TYPE ICE AND SNOW CONTROL!

Banox is a new chemical rust-inhibitor. We will use it mixed with salt this year in our snow and ice control program. Tests have shown salt to be more effective and more economical than sand for protecting icy streets. Unlike sand, it doesn't clog storm sewers or have to be swept up after the storm.

One big draw-back to using salt in times past was the corrosion it caused to automobile fenders. That problem has been overcome by the chemists. The manufacturers of Banox guarantee that salt treated with Banox is no more corrosive than plain water. **Concordia** is among the first cities to change to this new improved method of snow and ice control — another **SIGN OF PROGRESS.**

E. Alan Webster, City Manager

Concordia Water Bill

City Manager E. Alan Webster, of Concordia, Kans., keeps the public informed by means of a water-bill announcement of a corrosion inhibitor used for the city ice-control work.

How Pennsylvania Authorities Charge for Water Extensions

IN GENERAL, municipal authorities should be able to adopt a more liberal policy for service extensions than can the predecessor water companies, and in most cases they do. This is the observation of Charles Haydock, Philadelphia consulting engineer, expressed at the recent Pennsylvania Municipal Authorities Association meeting held at Eagles Mere, Pa.

Extensions can be made self-supporting by several different methods, he explained. Examples are the requiring of a contribution in aid of construction, and rendering service at the established rate, or by instituting a higher rate for service from the extension.

Beaver Falls Municipal Authority uses the latter policy. The rates charged for services from extensions recently constructed in various adjacent districts are approximately 20% above rates in the main-service area.

West View Municipal Authority uses the former method. The general policy has been to require a deposit amounting to the estimated cost of the extension, and to refund $125 to each ordinary customer who connects. The amount is considerably less than the cost of installing an individual well and pump, the only other method of obtaining water. All customers receive water at the same rates. The refund is about five times the average annual domestic bill. Both West View and Beaver Falls have substantial high-service areas, but no additional charges are made for service in these areas.

The Municipal Authority of Westmoreland County requires from each customer who connects with the extension, a deposit that will cover the entire cost of the extension and will refund 2½ times the estimated annual revenue. Rates for service from the extensive rural pipelines now under construction will be considerably higher — $3 per month for 2,000 gallons.

Swimming-Pool Chlorination

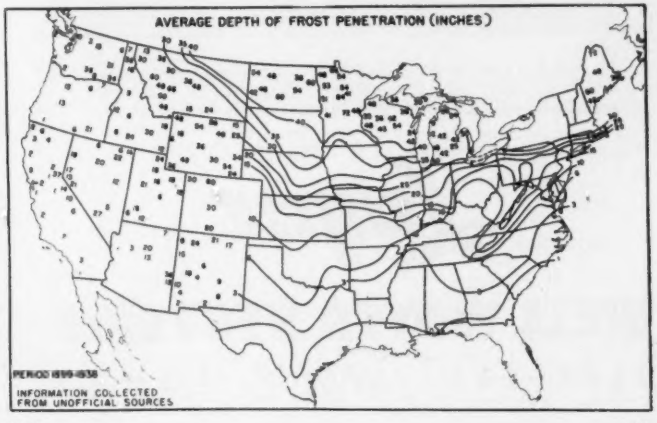
FOR good swimming-pool sanitation, the best practice is to chlorinate to a "free" residual rather than to rely on a residual obtained by combining chlorine and ammonia compounds. This was reported by Eric W. Mood, Director, Bureau of Environmental Sanitation, New Haven Health Department, in the *Journal* of the American Public Health Association, Vol. 40, No. 4.

According to Mr. Mood, the values of 0.4 to 0.6 ppm of residual chlorine as recommended by the Joint Committee Report, if interpreted to mean free, available residual chlorine, will produce satisfactory bacteriological results. The minimum value of 0.7 ppm that has been suggested in the past for swimming pools using chloramine, or combined available residual chlorine treatment, is insufficient to produce bacteriological results under conditions of this study which will meet the recommended stalling an individual well and pumps. ports.

The Joint Committee Report referred to is the report issued by the Conference of State Sanitary Engineers and the American Public Health Association.

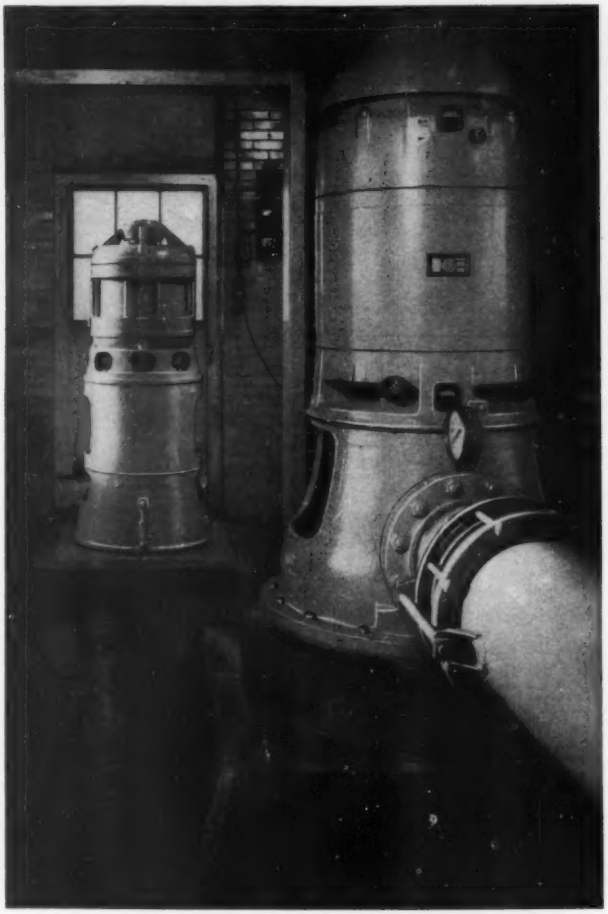
Frost Penetration

This U. S. Weather Bureau chart indicates where water-main freezing may become troublesome because of the frost penetration. The figures should be regarded only as a guide.



BEATRICE, NEBRASKA UPS WATER SUPPLY

WITH A LAYNE SHORT SETTING BOOSTER PUMP



The above Layne Well Unit (in background), driven by a 60 H.P. solid shaft motor, was installed in 1931 and has been operating efficiently for almost twenty years.

FROM four Layne Well Water Units, Beatrice, Nebraska was putting 1600 gallons of water per minute into the city through their six miles of 14 inch mains. Growth of population and new industries created a need for more. The problem was easily, quickly and economically solved by installing a Layne Short Setting Booster Pump in line with the wells. As a result, water supply was increased to 2,380 gallons per minute—nearly 41 percent.

The Layne 2-stage, 15 inch bowl booster pump, powered with a 100 H.P. motor was easily accommodated in a small pump house addition, thus saving the cost of extra heating equipment. Installed in 1948, it is giving highly satisfactory service.

These Layne Short Setting booster pumps may be used by other cities—and factories as a means of increasing water supply at a very nominal cost.

If you are in need of more water either from your present wells, or from new units, Layne engineers will gladly survey your present equipment and make dependable recommendations. For further information, catalogs, etc., address

LAYNE & BOWLER, INC.
General Offices, Memphis 8, Tenn.

Layne

WELL WATER SYSTEMS

VERTICAL *Turbine* PUMPS

LAYNE ASSOCIATED COMPANIES

ASSOCIATED COMPANIES—Layne-Arkansas Co., Stuttgart, Ark. ★ Layne-Atlantic Co., Norfolk, Va. ★ Layne-Central Co., Memphis, Tenn. ★ Layne-Northern Co., Mishawaka, Ind. ★ Layne-Louisiana Co., Lake Charles, La. ★ Louisiana Well Co., Monroe, La. ★ Layne-New York Co., New York City ★ Layne-Northwest Co., Milwaukee, Wis. ★ Layne-Ohio Co., Columbus, Ohio ★ Layne-Pacific, Inc., Seattle, Wash. ★ The Layne-Texas Co., Ltd., Houston, Tex. ★ Layne-Western Co., Kansas City, Mo. ★ Layne-Minnesota Co., Minneapolis, Minn. ★ International Water Corp., Pittsburgh, Pa. ★ International Water Supply, Ltd., London, Ont. ★ Layne-Hispano Americana, S.A., Mexico, D. F. ★ General Filter Company, Ames, Iowa.

Street Cleaning

Full Information Wanted and Supplied About Larchmont's Leaf-Gathering System

IN THE November issue, on page 13, THE AMERICAN CITY presented the leaf-gathering practices followed in Larchmont, N. Y. Through the story, Arthur Richards, Larchmont's Village Engineer, offered to send plans and other data fully describing his leaf blower, and the leaf bin used with the blower.

The response to his offer was so great that he prepared a form letter to all inquirers. We are privileged to present it below:

This letter is to amplify the article in the November issue of THE AMERICAN CITY, which has aroused considerable interest and several requests for more information.

The leaf loader we purchased is manufactured by the Leaf Loader Division of the American Structural Steel and Tank Company, 21050 W. Eight-Mile Road, Detroit 19, Mich., and was delivered to us on September 12, 1949, for the total price of $2,842.

This price included a rubber-tired trailer on which is mounted a gasoline-motor-driven suction fan, the suction piping, the exhaust piping with flexible pipe for the connection between the exhaust and the leaf bin, and a portable nozzle for work on sidewalks, between hedges, and at similar off-street locations.

The company did not sell a leaf-bin, but did furnish blueprints which we used as a basis for our own design, and we then had a local body shop fabricate the bin under our supervision. The total price of the bin was $407.10. It will hold 12 cubic yards of leaves somewhat chewed up and compacted. A cubic yard of such leaves weighs between 460 and 500 pounds.

Prior to the purchase of this loader, we had to hire several part-time laborers to assist in leaf collection. In 1948, we collected leaves on 28 days, using from one truck with four men to four trucks with 14 men, for a total of 76 truck days.

The 1948 estimate of cost was:

2,000 hours of labor	at $1.12	$2,240
600 hours of truck	at 1.00	600
Total		$2,840

In 1949, with our leaf loader, we hired no extra men, but used one truck with bin and usually four men, for a total of 40½ truck days. We collected somewhere in the neighborhood of 2,450 cubic yards of leaves which were taken, for the most part, to the yard of a local nurseryman for use as compost.

The 1949 estimate of cost was:

1,300 hours of labor	at $1.12	$1,456
324 hours of truck	at 1.10	356
Total		$1,812

Savings over 1948—$1,028, or 36%

The loader has been entirely satisfactory from both the operating and savings standpoint. We have had to hire no additional men—in fact, it has been possible to use only four men with the loader, and to use other regularly employed Village laborers, who normally would be on leaf collection, for other Village work.

When the leaves are wet, it is often necessary to break up their tendency to compact, which takes a little longer, but even so, the collection of leaves is faster and neater than by hand, and a pleasure to the taxpayers.

Not only is the work simpler, but it is far more efficient now that Arlington, Wash., has motorized the facilities of its street-cleaning department.

Five Times Faster Than a Man and a Broom

ARLINGTON, Wash. (1950 population, 1,600), likes clean streets as well as any other town does. But C. W. Fowler, chairman of the Street Committee, doesn't feel that the conventional power sweeper will fit into the municipal budget. So as an alternative, he has adopted the use of the Model 1000 Wilshire power sweeper. His time studies have indicated that the operator on the Wilshire can clean streets five times as rapidly as can a man with a broom. The sweeper is used on eight blocks of main streets and 13 blocks of other streets. Street work is directed by J. J. ("Pete") Enault, Street Commissioner.

An Important Message for Every Municipality

There's Over A Half-Century of Experience Behind INFILCO Water Conditioning Equipment

WHEN selecting the equipment manufacturer for your new or improved water conditioning plant, you owe it to yourself and your community to investigate the many superior advantages of INFILCO service and equipment.

As pioneer specialists in the design and manufacture of *all* types of equipment for municipal water conditioning plants, Infilco brings unusual skill and long experience to each job. This can mean dollars saved for engineers as well as communities, since many Infilco equipment items perform *multiple* tasks in *space-saving* dimensions, in addition to saving valuable chemicals. Plant operators find Infilco Equipment easy to operate. This is particularly appreciated in smaller communities where water plant budgets cannot afford highly skilled full-time operators.

Investigate *now* the many advantages of specifying INFILCO Water Conditioning Equipment *throughout.* Write our executive offices in Tucson. There's a nearby Infilco Field Engineer with all the facts regarding a complete equipment service.

"Big Towns or Small INFILCO Serves Them All"

SEND FOR..

Bulletin No. 60-C. It illustrates and describes many items of Infilco Equipment.

SERVING MUNICIPALITIES WITH WATER CONDITIONING EQUIPMENT THAT'S

Quality Engineered for Quality Performance

INFILCO

• BETTER WATER CONDITIONING AND WASTE TREATMENT SINCE 1894 •

INFILCO INC.

NEW YORK 17 • **TUCSON** • CHICAGO 16

SALES OFFICES IN TWENTY SIX PRINCIPAL CITIES

WORLD'S LEADING MANUFACTURERS OF WATER CONDITIONING AND WASTE TREATING EQUIPMENT

Sewerage and Sewage Treatment

Wartime Economy Must Include Sanitary Measures

THE great and commanding vigor that our nation uses when it sets its shoulder to a war economy demands respect the world over. And it must give confidence to the entire free world that the science of great production at relatively low costs still is ours to defend a precious way of life.

But our earnestness in this endeavor must not at the same time be our stumbling block. We must face sacrifices in our civilian economy to make us militarily strong. But we dare not sacrifice civilian activities that will throttle our war-economy effort.

Sewerage sanitation is a most notable example. Granted, one can scarcely justify new sewage-treatment plants that protect streams used for fishing and recreation only. But are we wise when we stop construction of plants that would protect water supply used in industries and used by the people who work in these industries? Is water less necessary than steel in making guns? Try doing without either.

Take also that youngest entry into the municipal sanitation field—the garbage grinder. Five years ago it was scarcely known in the sanitation field. Today, we find whole new communities of substantial size springing up that will never be faced with the annoyance and sanitary hazard of decaying food waste. Today, we find commercial houses, restaurants, soda fountains, seizing this device to improve the sanitary quality of their kitchens. Today, we find such great cities as Los Angeles specifying that foodhandling establishments must either provide refrigerated storage space for their kitchens or install food-waste grinders.

Do these have a place in our wartime economy? Do these help conserve manpower, save metal, use building space more efficiently? The answer, of course, is yes. In subsequent issues, we expect to say more about matters like this. In the meantime, let us quote figures from a famous chain drug company to give support to the fact.

This company converted a conventional fountain to a streamlined, efficient unit, fully equipped including the disposal unit. Other authorities noted the large volume of waste handled and the complete absence of garbage smell. Before the improvement, the alley was a breeding place for flies and rodents. This no longer is the case. Previously, this fountain used 12 garbage cans per day. The improvement also released three man-hours per day normally needed in washing cans, setting cans out for pick-up, and returning them to the garbage room. The size of the garbage room was reduced by half and is used only for non-putrefiable rubbish.

This is at the source. It does not count the lessening of the burden on the municipal collection crews that no longer have to gather and transport those 12 garbage cans daily to a point of disposal.

All these typify the type of industrial-production advance that makes America a great nation today. We would hamper ourselves by unwisely hindering advances like this. In a war economy, a nation must use those man-hours saved, that metal not wasted, that building space no longer needed, and that health safeguard made possible.

Tennessee Makes a Study Of Sewage-Treatment Costs

WHAT a city will have to pay to build, operate, and finance a sewage-treatment improvement is presented in rough-estimate form for the State of Tennessee by a special Stream Pollution Study Commission appointed by Governor Gordon Browning.

The estimate was based on studies made by the General Electric Company in 1945, adjusted to present cost figures by the Engineering News-Record Construction Cost Index as follows:

	Per Capita		
	Pop.	*Pop.*	*Pop.*
Cost of construction	25,000	50,000	100,000
Primary Treatment ...	$ 5.60	$ 4.80	$ 4.40
Plus trickling filters	17.60	16.80	15.20
Plus high rate filters	10.40	9.60	8.80
Plus activated sludge	12.00	11.20	10.40
Annual cost of operation			
Primary Treatment ...	0.70	0.65	0.55
Plus trickling filters	1.35	1.30	1.20
Plus high rate filters	1.10	1.05	0.95
Plus activated sludge	2.80	2.40	2.00
Annual debt service charges			
Primary Treatment ...	0.24	0.21	0.19
Plus trickling filters	0.76	0.73	0.66
Plus high rate filters	0.45	0.42	0.38
Plus activated sludge	0.52	0.48	0.45

Relative efficiencies of the various sewage-treatment processes also were appraised by the Governor's Commission. These figures are shown below:

	Percentage Removal		
Units and Plants	*BOD*	*Suspended Solids*	*Coliforms*
Sedimentation *	20-45	30-70	25-75
Chemical precipitation.	45-85	65-90	40-90
Plus trickling filter..	70-90	70-90	80-95
Plus activated sludge	80-95	85-95	90-96
Plus sand filter	85-95	85-98	85-98
Chlorination of effluent.	....	....	98-99

* Including septic tanks, Imhoff tanks, and sedimentation tanks.

The Commission was appointed by legislative act which also required establishment of a five-year program of stream-pollution abatement.

The Governor's Commission has seven members who were selected to represent various phases of the state's health and welfare. They are: J. W. Anderson, Chairman, industry representative; R. H. Hutchinson, public health; C. P. Swan, conservation; H. V. Miller, planning; D. W. Moulton, municipalities; R. L. Magee, industry, and G. R. Dempster, municipalities.

World Health Seminar On Environmental Sanitation

A SEMINAR on environmental sanitation, comprising about 40 specialists from 16 European countries, was held at The Hague from November 27 to December 2. The meeting was sponsored jointly by the Government of the Netherlands, the World Health Organization, and the International Health Division of the Rockefeller Foundation.

The meeting brought out that one-fifth of all deaths throughout the world are due to faulty environmental conditions which give rise, for example, to water-borne diseases such as typhoid, and insect-borne diseases such as malaria.

The seminar was placed under the chairmanship of Dr. W. F. J. M. Krul, Professor of Sanitary Engineering, Technical High School, Delft, and Director of the Institute for Water Supply of the Netherlands Government. The following countries were represented: Austria, Belgium, Denmark, Finland, France, Greece, Iceland, Ireland, Italy, Netherlands, Norway, Portugal, Sweden, Switzerland, United Kingdom, and Yugoslavia.

IS THIS YOUR CITY?
FIRE
FIRE
OPEN
THEN PULL DOWN HOOK
32
TOO FEW - TOO LATE!
Nearly 400,000 fires and two-thirds of the life loss by fire occur annually in residences. Delayed alarms and tragic consequences are frequently caused by inadequate box distribution in residential districts.

The GAMEWELL COMPANY

NEWTON UPPER FALLS 64, MASSACHUSETTS

IN CANADA: NORTHERN ELECTRIC COMPANY, LTD., BELLEVILLE, ONTARIO

Reading from left to right, Radio Captain Robert Barraclough, Sergeant Jack Stiffler, Fire Chief H. E. Whitcomb, and Sheriff Joe Tucker, standing in front of the city's departmental cars, which are equipped with radio.

Fighting Crime and Fire in Pueblo, Colo.

By ROBERT BARRACLOUGH
Radio Captain
Pueblo, Colo., Police Department

ONE of the best coordinated crime- and-fire-protection systems in this part of the country is the one that directs the efforts of the Pueblo Police Department, Pueblo Fire Department, and the Pueblo County Sheriff. A 250-watt fixed-main station was installed on the City Court House along with the 105-foot antenna tower. A dispatch station was set up in each separated department, with the police station designated as the control point, and the other two as dispatch points. All three, however, hear all incoming and outgoing calls and can operate the fixed transmitter from their respective positions. A remote console installed in the new police building is used for dispatching, and for efficient operation of the 25 radio-equipped cars.

Another remote console, installed in the main fire station, dispatches the apparatus to the fires which have been radio-reported by the police, and notifies the police of fires reported by other means. Thus, the entire police department and fire department are alert to any emergency reported. This unit is also used to keep in constant contact with Fire Chief H. E. Whitcomb and the cars of the four assistant fire chiefs. These officers can make their inspection tours without worrying about being reached if an emergency arises. The life-saving squad truck is also equipped with a mobile unit, and can be dispatched immediately to a scene of emergency in the city or county.

The third remote console for operating the main transmitter is installed in the office of Joe Tucker, Pueblo County Sheriff. It is also on the same frequency and call letters as the police and fire departments. The cars of Sheriff Tucker, the undersheriff, and two deputies are radio-equipped.

Sheriff Tucker points out some of the advantages stemming from the General Electric two-way-radio communications equipment. He can contact his office from his home, eleven miles away, and conduct business throughout the entire county without making unnecessary trips back and forth to his office. This also holds true for Undersheriff Joe De Joy and the deputies. When road blocks are being formed throughout the county, he can keep in constant contact with the other cars. Sheriff Tucker has many favorable comments on the way the equipment stands up to the constant wear and tear, as he has driven over 50,000 miles in his car in one year, over some of the roughest, mountainous roads in the country. Repairs during the year consisted of only one fuse and three tubes.

Two New Fire Stations in Phoenix, Ariz.

A new fire station in Phoenix, Ariz., above, providing space for two engine companies. The 750-gallon American La France pumper, left, is in regular use. The 1,000-gallon Mack engine, right, is an auxiliary rig. The station, the ninth to be constructed in Phoenix, contains sleeping quarters, a kitchen, and hose-drying tower. It cost about $35,000. Above, right, is the recently completed Phoenix fire-alarm station, occupied by the Fire and Public Works Departments radio systems. The station includes a 1,200-cell battery room, repair shop for radio and fire-alarm boxes, storage room, kitchen, showers, 4-foot-deep cable vault, and a 97-foot radio tower for the RCA system. In architecture and usefulness, the two new stations are community assets.

The REX FOGGER

The King of Foggers

FOR HEALTHY COMMUNITIES

Remember these Facts

1. ***It's HIGH in efficiency:***—Unsurpassed in ability to produce a dense, dry, full-bodied fog that does a thorough job of eradicating insect pests without burning or blighting the most delicate plants, or a moist fog, where a residue is desired. It's equipped with sprayer also, for garbage dumps, etc. You can fog and spray at the same time, if you wish. Your Rex Fogger, utilizing Rex Fogging and Spraying Solutions, will insure insect-free comfortable surroundings.

2. ***It's LOW in cost:***—No need to buy a truck to mount it on. Any one of your present available vehicles will draw this unit, mounted on its own small trailer.

3. ***It's SUDDEN DEATH to insect pests yet SAFE for plants, fish, animals and human beings***—never blights plants or shrubbery, never kills fish in streams or lakes, and never brings discomfort to man, woman or child.

Call your local Distributor, or Write

Some Choice Distributorships Available

HABERMAN INDUSTRIES, INC.

BOX 396 — Chicago Plant: 2350 W. 58th St. — HASTINGS, NEBRASKA

Refuse Collection and Disposal

South American Sanitation

Quito, Ecuador, believes in good equipment, spotlessly maintained for its refuse-collection service. Here are two of its Reo trucks, carrying Heil Colecto-Pak bodies, and painted in a white which is attractive and hygienic.

Louisville, Ky., Landfill

LOUISVILLE has two landfill sites containing about 50 acres each. In these areas are placed approximately 165,000 tons of refuse per year.

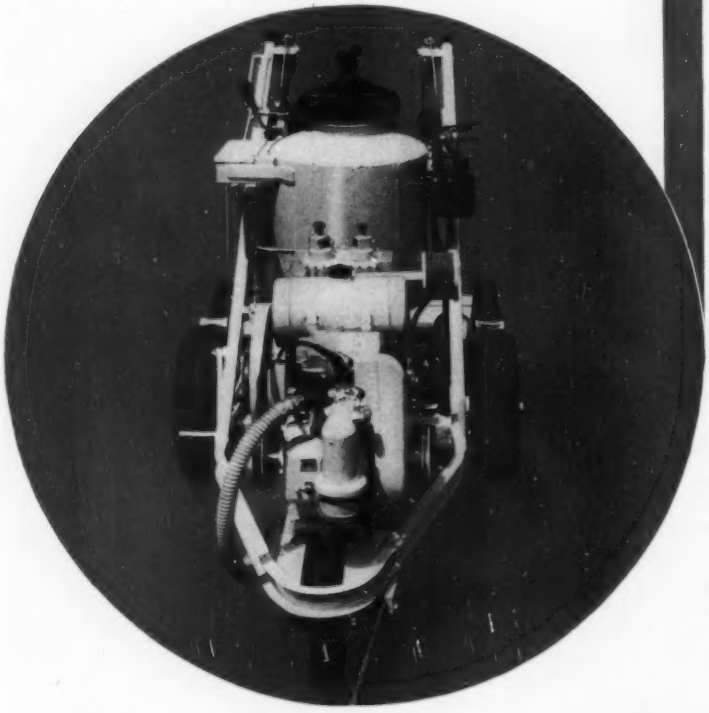
The personnel required at each fill site includes a foreman, a spray-truck operator who also acts as a helper, a scale man, and five laborers. The work is under the general supervision of H. T. Meiners, Director of Public Works.

In the illustration at the right, an Allis-Chalmers crawler tractor with a Tracto front-end shovel bulldozes the garbage into a 3-foot-deep trench. Below, at the left, the tractor, in the next step, packs the trash into a flat, dense mass. Below, at the right, as the final step, the tractor spreads a 24-inch dirt cover over the trench full of garbage.

REFLECTO-LINER

Keynote OF TRAFFIC STRIPING EFFICIENCY AND ECONOMY...ONE STRIPER FOR ALL MARKING MATERIAL!

The Wald *"REFLECTO-LINER"*, Model 12, is the only striping machine specifically designed to handle with top efficiency: pre-mix, reflective binders or ordinary traffic paints. It is completely *new* in design, presenting many special features that contribute to its accuracy, high efficiency and operating economy.



SPECIAL FEATURES

The Reflecto-Liner, Model 12, Striper introduces the High Capacity "Nu-Matic" Spray Gun, which lays a clean sharply defined line with an even cross distribution of material.

The "heart of the striper" is a constant 100% air reserve supply, maintained at all times during operations without burdening the compressor or motor, continuous efficient operation is assured as a result of this reserve air capacity.

Anti-vibration frame construction is of channel and tubular steel, with pneumatic and zero pressure wheels, front tire is puncture proof.

Powered by Hi-Speed, 6 H.P. air cooled gas engine, that purrs (not races) with heaviest striping materials.

Operates at 2 to 5 M.P.H.; ribbed drivers insure positive drive. Large compressor (12.5 cu. ft.) handles thinnest paint to thickest compound.

Tank (12 gallon) has wide mouth (5.75 in.) with strainers in paint line for easy removal of foreign matter.

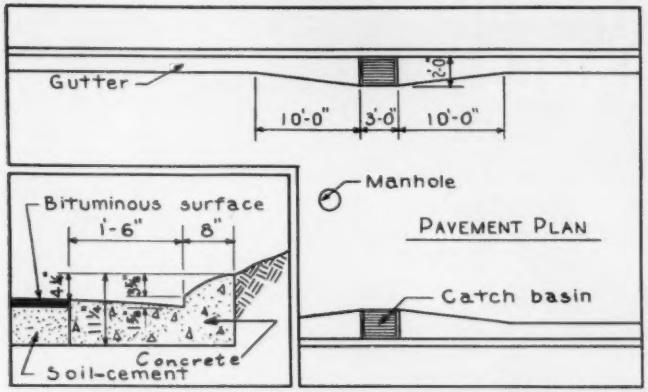
The Reflecto-Liner has been engineered for easy maneuverability especially when heavier reflective coatings are required.

For complete information send for Bulletin #507.

Wald Industries Inc.

MONTGOMERY, PA.

Street Construction & Maintenance



This is the curb-and-gutter section used in Alexandria, La.

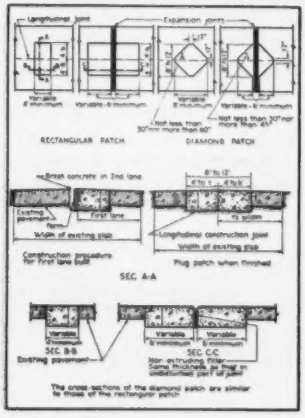
How Maintenance Costs Have Risen

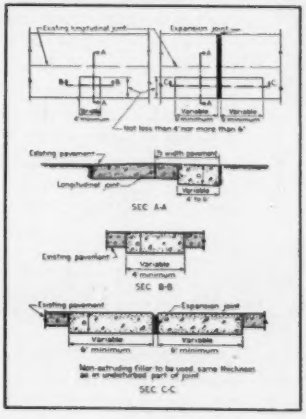
THE cost of maintenance has risen less on municipal streets than it has on state, county, and local rural roads, according to H. A. Radzokowski, Chief, Maintenance Branch, U. S. Bureau of Public Roads. According to Bulletin No. 29 of the Highway Research Board, Washington 25, D. C., maintenance of municipal streets has risen 107%, from 1935 to 1948, or from a figure of $146,000,000 to $302,000,000. In that same period, state highway departments have increased their maintenance costs from $183,000,000 to $461,000,000, or 152%; county and local rural road departments increased maintenance spendings from $192,000,000 to $407,000,000, or 112%.

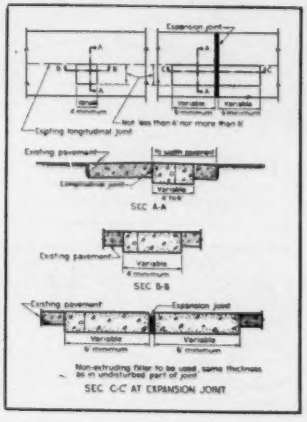
The average cost of maintenance per vehicle mile rose from 2.3 mills in 1936 to 2.9 mills in 1948.

How to Patch Concrete Pavement

A patched pavement can often be stronger than a new one, if it is correctly patched. Below and at the right are plans for four of the patching methods which are recommended by the Portland Cement Association, Chicago, Ill.


RECTANGULAR PATCH
DIAMOND PATCH
SEC A-A
SEC B-B
SEC C-C
Plug patch when finished
The cross sections of the diamond patch are similar to those of the rectangular patch

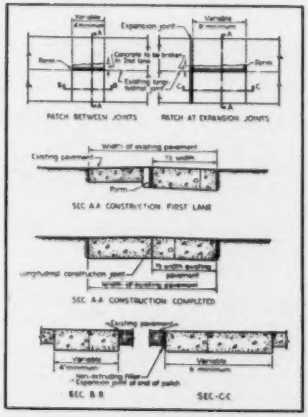




This Catch-Basin Design Aids Base Compaction

SOULE BUTLER, City Engineer, Alexandria, La., didn't like the difficulty he encountered in compacting soil-cement streets near catch-basins. So, to avoid difficulty, he widened the gutter apron as shown in the accompanying drawing. This allows the sheep's-foot roller to maneuver close to the edge and eliminates the need of hand-tamping.

Mr. Butler explained this refinement in design at a recent meeting of the American Road Builders' Association. The drawing came from the Portland Cement Association *Soil-Cement News*.



IMPROVE YOUR COMPRESSOR PERFORMANCE

...by using the TEXACO air compressor oils designed for YOUR operating conditions

Different air compressor operating conditions give rise to different operating problems—each of which calls for a special type of oil. By using the proper Texaco air compressor oil, you can overcome *your* difficulty, assure efficient compressor operation, reduce wear and maintenance costs. For example—

1. TO OVERCOME RUST, use Texaco rust-inhibited air compressor oils. They keep compressors and systems rust-free whether running or idle.

2. TO OVERCOME CARBON AND GUM, use Texaco heavy-duty air compressor oils. They have special detergent properties and are highly oxidation-resistant—will keep compressors clean under extreme operating conditions.

3. TO OVERCOME "WET CYLINDER" WEAR, use Texaco compounded air compressor oils. They resist the washing effect of moisture of condensation.

4. TO OVERCOME "NORMAL" OPERATING DIFFICULTIES, use Texaco straight mineral air compressor oils. They assure clean operation and reduce wear.

Your Texaco Lubrication Engineer will gladly help you select the right oils to assure you the most efficient compressor operation. Contact him through the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write The Texas Company, 135 East 42nd Street, New York 17, N. Y.

TEXACO ROCK DRILL LUBRICANTS EP are "extreme pressure" lubricants designed to give full protection against wear, to guard against rust, and to prolong drill life. Use them and you'll drill *more footage at lower cost.*

TEXACO

TEXACO Lubricants and Fuels

FOR ALL CONTRACTORS' EQUIPMENT

TUNE IN . . . TEXACO presents MILTON BERLE on television every Tuesday night. METROPOLITAN OPERA radio broadcasts every Saturday afternoon.

Get What You Want—No Charge!

Please check over the list of interesting free catalogs on this and following pages. To obtain the literature you want, write directly to the manufacturers at the addresses given. If you prefer, you may circle the identifying numbers on this coupon and mail to THE AMERICAN CITY, 470 *Fourth Ave., New York* 16, *N. Y., and we will see that catalogs are sent to you without expense or obligation.* 3/51

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Name ..... **Position** .....

Address .....

First Aid Equipment For Civilian Defense

200 Originators of the latest adopted design of military litters, the Ambulatory Splint Co., 392 Second Ave., New York 10, N. Y., manufactures stretchers constructed of non-critical materials to meet civilian demands. They are inexpensive, yet sturdy. The company also supplies to the Government Thomas arm and leg splints and accessories and issues medical bandages, dressings, and adhesive tape.

Asbestos-Cement Pipe

201 Century asbestos-cement pipe is formed on a smooth, steel mandrel, and its interior takes its surface from this. The pipe is non-metallic, its surface resists corrosion, and it is exceptionally strong, yet, light in weight. Century simplex couplings are of the same asbestos and cement composition as the pipe. Further information may be obtained from the Keasbey & Mattison Co., Ambler, Pa.

Traffic Marking Equipment Done in Ten Minutes

202 Modernize your traffic-marking equipment with the Vacu-Liner spray nozzle, a product of the Hunt Process Co., 7012 Stanford Ave., Los Angeles 1, Calif. This device eliminates ragged edges, edge build-up, end-of-line dribble, prolonged clean-up, and does away with shields, discs, and air-jet assemblies. Vacu-Liner is a corrosion-resistant, electro-coated seamless high-grade metal alloy instrument which assures straighter lines through better vision. For complete details, write to the firm.

Water Seals and Seal Equipment For Every Purpose

203 Seal equipment for every purpose is furnished by The United Seal Co., 450 S. Pearl St., Columbus 15, Ohio, including lead and wire seals, for all kinds of utility meters. The Padlock seal for meter boxes, is tamperproof, renewable, easily applied, and requires no sealing tool. Further information will be furnished by the concern.

Motor Grader with Eight Overlapping Forward Speeds

204 Adams motor graders have eight overlapping forward speeds, and a high-arch front axle for clearance and positive mechanical controls. They are especially adapted for maintaining city streets and alleys, and leveling playgrounds. A product of the J. D. Adams Mfg. Co., Indianapolis, Ind., the machine has a wide range of blade adjustments and balanced weight distribution.

Waste Treatment Equipment

205 Bulletin No. 235, issued by the Pacific Flush Tank Co., 4241 Ravenswood Ave., Chicago 13, Ill., discusses the P.F.T. waste-treatment equipment, including floating covers for digesters, digester heater, and heat exchangers, cover position indicators, gas safety equipment, sprinkling-filter plants, rotary distributors and pre-aeration systems. Write for your free copy of this booklet.

Get Your Ordinances Streamlined

206 Many municipalities are looking into the desirability of giving their officials and citizens a modern City Code with a codification of all the ordinances. More information on how a city's laws can be modernized may be obtained by writing to the Michie City Publications Co., Charlottesville, Va.

Air Raid Warning System

207 In these times when modern warfare necessitates the need of an effective air raid warning system in every community, alert officials attempt to provide the method which is adequate. Federal Enterprises, Inc., 8756 S. State St., Chicago 19, Ill., manufacture vertical sirens which radiate the sound, are always ready for action, save in expenditure, can be centrally controlled and dependably operated, and which require almost no maintenance.

Swimming Pool Paint

208 The Steelcote Mfg. Co., Gratiot at Theresa, St. Louis 3, Mo., on request, will send Trial Offer "D" containing its Damp-Tex No. 2 swimming-pool paint. This paint is made with a rubber base, is unaffected by water, impervious to alkali, chlorine, resistant to sun, salt and chemical, and forms a satin tile-like finish. Available in three non-fading, permanent colors, the paint deters algae and marine growth. Obtainable in 8 colors is Lay-Tite, rubber base floor coating, non-slip and regular paint, for aprons and curtains. It will not chip, peel, check or fade, and it resists caustic, chemicals, and abrasions.

Inexpensive Traffic Counts

209 Actual counts of traffic at an intersection are the best guidance for installing traffic signals or revising traffic movements. The Denominator is a hand tabulator that keeps count of number of vehicles. With three of these inexpensive little counters you can count the number of vehicles turning left, straight ahead, turning right. A set of 12 will measure all the movements at an intersection. Write The Denominator Co., Inc., 261 Broadway, New York 7, N. Y.

These Clamshell Buckets Are All-Welded

210 The C. S. Johnson Co., Champaign, Ill., subsidiary of the Koehring Co., of Milwaukee, has prepared a catalog describing its three types of all-welded clamshell buckets in sizes ⅜-yard to 2½-yard. The company claims that these buckets save weight and add digging strength and endurance. Also listed is the manufacturer's line of concrete batching and cement-handling equipment. Write for your copy of the catalog.

For Water Filtration

211 A new concept of water filtration is assured by the self-cleaning Sparkler Model SC filter, according to the Sparkler Mfg. Co., Mundelein, Ill., for this diatomite water filter makes large-volume filtration possible while reducing maintenance costs. Its compact design provides a large amount of filtering area within a small tank, assuring long cycles, and high-flow rates. The SC is used for swimming pools, and municipal, industrial, and commercial applications.

Kettles for Road Repair

212 The Aeroil Products Co., Inc., 5 Wesley St., S. Hackensack, N. J., reports that its Aeroil Heet-Master, available in 230, 330, and 500 gallons, saves 50% on fuel and time in road repair building. Write for Bulletin 400RN as well as for other bulletins on asphalt surface heaters and paving bool heaters, utility trailer sprayers, burners and torches.

Concrete Saws

213 You're able to saw 12 feet per minute in asphalt or five feet per minute, 1-inch deep in cured limestone concrete when you employ Clipper concrete saws. This equipment cuts through the toughest concrete, wherever patches, trenches, openings, or contraction joints are needed. Among the features are the floating three-point suspension which automatically protects blade and adjustable depth lock. For further information, contact the Clipper Mfg. Co., Concrete Saw Div., 2813 N. Warwick, Kansas City 8, Mo.

Lubricating Oil

214 Texaco Ursa oil cuts down fuel consumption because it keeps rings free and valves functioning smoothly, reports The Texas Co., 135 E. 42nd St., New York 17, N. Y. Heavy-duty gasoline and diesel engines will run better, perform more work, and last longer when they are lubricated with this product, which is detergent and dispersive, and product, which is detergent and dispersive.

(Please Turn to Page 25 for More Literature)

33% MORE GROUND CONTACT

Single Drive . . .
MORE TRACTION MORE ACTION

And much more satisfaction with the M-B 501 grader. Built into the 501 are the largest grader tires in the business—huge 18:00 x 24 earthmover tires that spread out over 612 square inches to give you flotation for soft going and tremendous traction on *any* surface. Traction unequaled by any other grader in its class—one of the main reasons the 501 will *work* where other graders can not even *travel*.

These large tires provide additional advantages. They roll over irregularities without affecting the blade; they do not sink in and spin as readily as the smaller, narrow tandem drive tires; they roll easier on any surface; all advantages no other grader provides. Get all the facts, and you too will get an M-B 501.

Huge 18:00 x 24 earthmover on the M-B 501 spread out to provide 612 square inches of ground contact for traction.

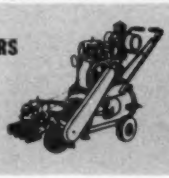
COMPARE WITH TANDEM DRIVE

The *largest* tandem drive tires in the 50 H.P. class are 12:00 x 24, each tire providing only 116 square inches of ground contact, or a total of 464 square inches. Compare with the 612 square inches above.

MEILI-BLUMBERG CORPORATION

1635 *WISCONSIN STREET • NEW HOLSTEIN, WISCONSIN*

MAINTAINERS



STREET AND HIGHWAY MARKERS

TRAILERS

Which Catalogs Interest You?

Write directly to the manufacturers, or use the coupon on page 23

Fire Alarm Boxes

215 Many lives are lost in fires because of delays in giving alarms, often caused by an insufficient number of boxes in residential districts. If your community is in need of an adequate fire-alarm system, contact The Gamewell Co., Newton Upper Falls 64, Mass. This firm will send you full information on its fire-alarm boxes that will help to save lives and property.

Portable Air Compressors, Fast Hydrant Drains

216 The Jet Drain Engrg. Co., 215 N. Fayette St., Saginaw, Mich., manufactures the Dapco compressor, which has no piston rings and requires no oil. Precision-machined and air-sealed with heavy neoprene, non-explosible Dapco compressors are small, compact, and able to deliver high pressures. The company also makes the one-minute hydrant jet drain, capable of 60-second draining which comes complete with motor and direct-connected compressor.

Diesel Engines

217 The four-page bulletin, No. 320, of The Baldwin - Lima - Hamilton Corp., Philadelphia 42, Pa., contains design features, specifications, cross-sectional drawings, performance courses and ratings of the Baldwin Series 700 diesel engines. Baldwin diesels have welded steel bedplates and frames, oil-cooled pistons, alloy cast-iron cylinder liners, and heavy-duty precision-type main bearings. Write for your copy of the bulletin.

Geared Pump Drive For Vertical Turbine Pumps

218 For standby power use in well pumping installations, a right-angle gear drive provided by the new Gearturbo pump head will fill your requirements. Some construction features of the Gearturbo are spiral bevel gears, high-quality, heavy-duty thrust bearings, rugged construction, constant lubrication, easy pump-shaft adjustment, and adaptability to all makes of vertical turbine pumps. Descriptive leaflet on the Gearturbo is free on request from the Peerless Pump Div., Food Machinery and Chemical Corp., 301 W. Ave. 26, Los Angeles 31, Calif.

Stands to Support Office Machines

219 Tusco stands are adaptable to over 95% of all office machines, according to the manufacturer, the Tubular Specialty Mfg. Co., 1940 Stanley Ave., Detroit 8, Mich. They are equipped with an adjustable ball foot and provide solid support for the heaviest and most active machines on the most uneven floors. Full details will be sent you by the firm.

Fire Hydrants

220 Bulletin 4410, issued by the Darling Valve & Mfg. Co., Williamsport 10, Pa., gives complete information on the firm's fire hydrants which feature ample water supply without perceptible pressure lose, easy operation, and positive, automatic flushing of multiple drains.

Water Meter Requires One Set of Repair Parts

221 The Trident Meter, manufactured by the Neptune Meter Co., 50 W. 50th St., New York 20, N. Y., requires only one set of repair parts. The parts are interchangeable, thus giving you a simplified parts inventory, and requiring less storage space. Full details will be sent by the company.

Pipe Cleaning Tools

222 The Flexible Underground Pipe Cleaning Co., 9059 Venice Blvd., Los Angeles 34, Calif., manufactures pipe-cleaning tools for any size of sewer line and for all sizes of water lines. For full details about the equipment, write to the firm.

Mechanical Packings For Every Purpose

223 A 32-page illustrated booklet covering all types of Flexrock mechanical packings is available if you request on official letterhead to the Flexrock Co., Packing Div., 36th and Filbert Sts., Philadelphia 4, Pa. Contents include description of filament, rubber, asbestos-sheet, thread-compound and gasket-type packings, and a description of self-forming, self-lubricating Flexrock Process packing.

Floor-Finish Remover

224 By using Holcomb seal remover you can make worn floors look like new floors, usually for only a fraction of sanding cost and with less equipment. Seal Remover is a non-toxic, non-flammable liquid which loosens the floor's old finish so that it may be removed with a wire brush attached to a scrubbing machine. It may be used repeatedly without damaging the floor, and is ideal for floors too old for effective sanding. The J. I. Holcomb Mfg. Co., R.R.-17. Box 134, Indianapolis, Ind, will supply you with more information on request.

Concrete Pole Specifications

225 Just issued by the Western Foundation Corp. is a new eight-page bulletin, *Concrete Piles and Caissons*, with suggested standard specifications for cast-in-place concrete piles. Illustrated are button-bottom piles, pedestal piles, concrete-filled and concrete-encased composite piles, and compressed concrete piles. The Western Foundation Corp., 2 Park Ave., New York 16, N. Y., will supply you with a free copy of its bulletin.

Hydraulic Gang Mowers

226 Worthington gang mowers with Hydro-Travel control saves time and cuts costs. The fast hydraulic lift eliminates regrouping mowers by hand when crossing bridges and traveling through woods. It can be mounted on the front-drive Model F Chief tractor. For full details on this cutting mower for parks, colleges, institutions, and highway shoulders, write to the Worthington Mower Co., Stroudsburg, Pa.

Sickle Bar Mower

227 The new George sickle bar mower has a 1½ to two-mile-an-hour speed and two clutches, one for the sickle bar and the other for the traction drive. This single-purpose machine weighs 139 pounds and costs $139.50 f.o.b. factory. The bulletin containing complete information will be sent by the manufacturer, the George Tractor Division, Community Industries Association, Sullivan, Ill.

Booklet on Use Of Steel Sheeting

228 Contractors and engineers may obtain copies of the booklet, *Armco Steel Sheeting for Trenches, Cofferdams, Cutoff Walls, Shore Protection*, from the Armco Drainage and Metal Products, Inc., Middletown, Ohio. The illustrated publication tells how to use lightweight corrugated steel sheeting to effectively control movement of soil or water; points out where Armco interlocking and flange-type sheeting can be used to advantage, and gives a method of figuring sizes and spacing of walls and struts.

Two-Way Mobile Radio

229 Motorola's new Uni-Channel Sensicon dispatcher with Sensicon circuit for permanent selectivity and seven other of the firm's developments give good two-way radio performance. Uni-Channel can be quickly established in the field, or auxiliary headquarters of civil defense units, or essential industries. Full information may be obtained from Motorola's Communications & Electronics Div., 4545 Augusta Blvd., Chicago 51, Ill.

Chain-Grate Incinerators

230 The chain-grate principle, used for years in boiler construction, makes it possible to design an incinerator with a continuous feeding of refuse and continuous discharge of residue. Many feel that this provides better control of burning and an improved residue. For full details, write to The McClave Co., Allentown, Pa.

Night, Day Equipment For Roadside Signs

231 Roadside signs equipped with Winko-Matic alternating flash attracts the motorists' instant attention. The Winko-Matic Signal Co., 750 Broadway, Loraine, Ohio, points out that its equipment for roadside warning signs assures visibility for at least half a mile, requires minimum maintenance, and can be quickly and easily installed on existing signs at minimum cost of time and expense. Full details will be sent on request.

Accurate Operating Readings

232 You can read and record accurately such important factors as pressure, flow, liquid level, voltage, current power, and totalized power over any distance with the Bristol Dynamaster electronic instruments. These should have specialized applications in the fields of water supply, sewerage, electric power, gas supply. Address your request to the Bristol Co., Waterbury, Conn., and ask for bulletins M-1708 and W-1821.

Chicago Chooses Miller Meters

233 The Duncan Parking Meter Corp., 835 No. Wood St., Chicago 22, Ill., reports that the City of Chicago, after considerable study, research and tests, has chosen its product, the Miller manual parking meter. This machine is of rigid construction, economical and simple to operate. For literature about this new 1951 Miller meter, write to the Duncan Parking Meter Corp.

Cast Iron Soil Pipe

234 Cast-iron soil pipe outlasts any building, guards your community against ground water pollution and escaping sewer gas, and eliminates the need of street openings, trench excavations, backfill, and repaving for a job. Secure further infomation from the Cast Iron Soil Pipe Institute, Heurich Bldg., 1627 K St., NW., Washington, D. C.

Salvage Covers

235 Fulton Shuredry Green-Bak salvage covers have been used effectively to cover and protect portions of buildings damaged by rain or storm and have prevented destruction to unburned material in fire-damaged buildings. Manufactured by the Fulton Bag & Cotton Mills, P. O. Box 1725, Atlanta 1, Ga., Fulton Shuredry prevents water penetration and water seepage.

Fences for Every Purpose

236 A copy of the pamphlet, *Your Fence*, will be sent by the Cyclone Fence, U. S. Steel Subsidiary, Waukegan, Ill. These fences can be employed to control admissions, separate recreation areas, and enclose zoos, and guard plants from sabotage. When contacting the firm, address your inquiry to Dept. B-21.

For Your Paving Needs

237 Bitumuls solves three basic paving problems because it penetrates, coats damp native materials, and it seals. This product is manufactured in the East by the American Bitumuls Co., and in the West by Stancal Asphalt & Bitumuls Co., both with home offices at 200 Bush St., San Francisco 4, Calif. Service engineers are available for consultation. For full details, write for Bitumuls handbook.

(Please Turn to Page 26 for More Literature)

Obtain this Literature Free of Charge!

Write directly to the manufacturers, or use the coupon on page 23

Higher-Melting Sewer Joint Compounds

238 A root-resistant compound which withstands high service temperatures, Atlas G-K 58, is the product of The Atlas Mineral Products Co., Mertztown, Pa. Features of G-K 58 are its flexibility, adhesion, low shrinkage, ability to prevent infiltration and exfiltration on all sewer pipelines. It fills the annular space between bell and spigot, can be used under wet trench conditions, and is unaffected by alkalis, sewerage, salts, acids or soil constituents. Write to The Atlas Mineral Products Co. for additional details.

Cuts Water Pipes

239 The Ellis pipe cutter is suitable for cutting large sizes of pipe. No. 01 cuts pipe 4 inches to 8 inches, and No. 1, pipe from 4 to 12 inches. For details on the complete line of pipe-cutting tools, write to Ellis & Ford Mfg. Co., Ferndale 20, Mich., asking for the circular and price list No. 33 AC.

New Utility Drill For Plant Maintenance

240 A new multi-purpose utility drill for plant maintenance is manufactured by Gardner-Denver Co. Called the S17 Utility Drill, this full-fledged, self-rotating pneumatic hammer drill, weighing 19 pounds, is ideal for placing anchor bolts and for running conduits, cable or pipe. Upon request, Gardner-Denver Co., Quincy, Ill., will furnish additional information about its drill and its utility drill kit in a handy carrying case.

For Jointing Water Mains

241 The Leadite Co., Girard Trust Co. Bldg., Philadelphia 2, Pa., makes Leadite for jointing cast-iron water mains. Shipped in powder form, and packed in sacks of 100 pounds each, Leadite is melted and poured, and requires no digging of large bell-holes. Write to the company for further information.

Electric Photometer For Water Analysis

242 The Klett Summerson electric photometer is adaptable for use in water analysis. It can be used for any determination in which color or turbidity can be developed in proportion to substance to be determined. For complete information, write to the Klett Mfg. Co., 179 E. 87th St., New York, N. Y.

Main-Line Meters

243 Sparling water meters are available for flanged, bell and spigot, threaded, steel, iron, concrete, transite, and wood mains for sizes from two inches and larger. Every meter is a complete totalizing unit, easily installed as a valve or fitting. Bulletin 310, which describes the product, may be obtained from the Sparling Meter Co., Inc., Box 3277, Los Angeles 54, Calif.

Locates Leaks Without Digging

244 Noted for its accuracy is the Globe Geophone which is used by public works departments and industrial plants for detecting by sound the exact location of leaks in water or steam pipes. The complete outfit, costing $85, includes connecting tubes, two Geophone discs, headpiece, and heavy leather-covered carrying case with shoulder strap. The Geophone operates on the principle of the seismograph. Complete details may be obtained from the Globe Phone Mfg. Co., Dept. Y, Reading, Mass.

Taste and Odor Control

245 The Tennessee Corp. of Atlanta, Ga., and Lockland, Ohio, on request will send a free booklet describing the uses of Ferri-Floc, a coagulant which helps to remove certain types of tastes and odors. Write for your copy of the publication.

Concrete Lighting Poles

246 Durable Hy-Lite concrete lighting poles and equipment manufactured by the American Concrete Corp., 4727 N. Lamon Ave., Chicago, Ill., require no painting and little maintenance. Hy-Lite standards are designed to help distribute light efficiently and meet all modern street lighting requirements. For full details about centrifugally spun-granite concrete lighting standards, write to American Concrete.

Gas Meters

247 Sprague meters for manufactured, natural, and butane air gases are available in many models. The new Sprague Zephyr aluminum meter weighs 13 pounds, will not rust, needs no paint, and has interchangeable parts. The No. 5A model, of cast-iron construction, has the Sprague three-chamber design incorporating the oscillating hard-faced valve. For full details on these two types and others, write to The Sprague Meter Co., Bridgeport 4, Conn.

Railroad Safety Gates

248 Automatic, round-the-clock, dependable protection is provided by Western Model 10 automatic cross gates, a product of the Western Railroad Supply Co., Chicago 8, Ill. The company reports that case histories prove the efficiency of its product in all parts of the country, under any kind of weather conditions, and regardless of light or heavy traffic flow. For full details, write for Bulletin 748-AC10.

Main and Emergency Sterilization

249 Water works seeking information on main sterilization can contact %Proportioneers, Inc.%, P. O. Box 1442, Providence, R. I. This firm makes equipment which sterilizes mains to prevent contamination. The standard heavy-duty midget Chlor-O-Feeder has a normal-design capacity of 5.5 gallons per hour at an injection pressure of 85 psi. Other models are the High-pressure midget Chlor-O-Feeder, and the Model 47-Chem-O-Feeder. For full details on main and emergency sterilization, write to the company.

Trucks for City Service

250 The White Motor Co., Cleveland 1, Ohio, declares that its truck model White 3000, designed expressly for operation in city service, has such advantages as greater maneuverability, more payload, shorter length, better visibility, low loading height, and greater efficiency in traffic. Complete information will be furnished by the company.

This Process Prevents Water Pipe Leakage

251 The Centriline Corp., 140 Cedar St., New York 6, N. Y., reports that the sealing effect of a cement mortar lining applied centrifugally by Centriline is such that a lining of ¼-inch thickness will safely span holes up to and including 1¼-inch diameter under as great as 200 pounds of water pressure. If your water mains are losing their efficiency, consult Centriline, and write for the 28-page catalog.

Mixed-in-Place Street Construction

252 The Seaman self-propelled mixer for building streets has a 7-foot mixing width and is gasoline or diesel powered. The Seaman self-propelled Trav-L-Plant has these same features in addition to a spray bar, pump, pump tachometer, fifth wheel assembly, and meter for precision control of bitumen or water application. Write to Seaman Motors, Inc., 292 N. 25th St., Milwaukee 3, Wis., for your free copy of the *Self-Propelled Bulletin*.

Rock, Earth Boring Trench Machine

253 The McCarthy rock and earth boring trench machine can handle augers from 4 inches to 16 inches in diameter, and is used for laying gas lines, water and small sewer lines, and conduit. This machine eliminates cutting into road and street surfaces, and can be employed without stopping traffic. It can be "inched" along at nearly zero or drilled as fast as 6 feet per minute. Write to The Salem Tool Co., S. Ellsworth Ave., Salem, Ohio, for further information.

General Purpose Pump

254 The Type M single-stage double-suction pump of Economy Pumps, Inc., Div. of the Hamilton-Thomas Corp., Hamilton, Ohio, is a general-purpose pump suitable for general water supply or heavy mill service. Of rugged design, it is available in capacities from 50 to 30,000 gallons per minute at heads to 300 feet. Catalog No. A750 gives complete design and construction details. When asking for a copy, write to the concern's Dept. AB-2.

Protect Your Property With Floodlights

255 Bulletin 2565, *Light! Protect Your Property*, will be sent by the Crouse-Hinds Co., Syracuse 1, N. Y. This publication describes the firm's floodlights employed to protect municipal and industrial locations. A complete line of flashlights and searchlights to meet the needs of any type of protective lighting is offered. Write for your copy of Bulletin 2565.

Pressure Pipe

256 If you desire information about Supet deLavaud cast iron pipe produced centrifugally, in modern long lengths, write to the Alabama Pipe Co., Anniston, Ala. The firm produces superior pressure pipe at its recently-completed plant in Anniston.

A Safe, Effective Wet Water

257 Use of wet water made from Unox penetrant reduces fire temperature immediately, prevents rekindling by penetrating to sub-surface heat layers, abates smoke, yet does not deteriorate fire hose. For a copy of Extinguisher No. 1636 *Report on Wetting and Penetrating Agents*, write to the Carbide and Carbon Chemicals Div., Union Carbide and Carbon Corp., 30 E. 42 St., New York 17, N. Y.

Diesels Cut Power Costs

258 The Nordberg Mfg. Co., of Milwaukee 7, Wis., reports that its diesels cut power costs. If you're in search of an economical power system, why not contact the firm for information on Nordberg two and four-cycle oil-burning and Duafuel diesels, and gas-burning engines, available in sizes from 10 to 9,600 hp.

Lifetime Street Signs

259 Made of lifetime aluminum are Lake Shore Markers which are rustproof, durable, and attractive. The firm, Lake Shore Markers Div. of Lake Shore Pattern Works, 654 W. 19th St., Erie, Pa., manufactures street signs with day and night visibility. Write for illustrated catalog.

Fire Pump

260 Among the features of the Barton-American Model DMB fire pump are maximum flexibility in operation, low engine speeds due to four-stage construction, one-point oil lubrication for gears and bearings, direct gear drive, and reserve capacity for 1½-inch or 2½-inch lines. For a copy of Bulletin 8734, write to American-Marsh Pumps, Battle Creek, Mich.

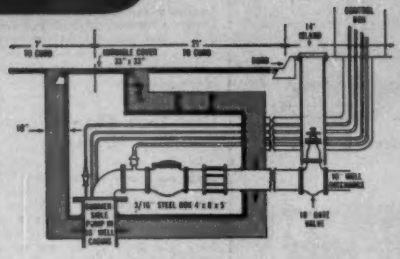
(See Page 28 for More Bulletins)

New 17,150-Home Lakewood Park will be supplied by BJ submersibles!

another

BJ

submersible pump
case history



UNDERGROUND VAULT is hermetically sealed and houses a hermetically sealed 4-stage, 60 hp BJ Submersible which pumps 1800 gpm against a 100 ft. head.

Lakewood Water and Power Co. uses BJ "invisible" pumping stations to service this great housing "city"

LAKEWOOD PARK, just north of Long Beach, California, is probably the world's most modern community. Its 3500 acres of new homes, schools, churches, parks and shopping center are planned to benefit from the newest in design, methods and materials.

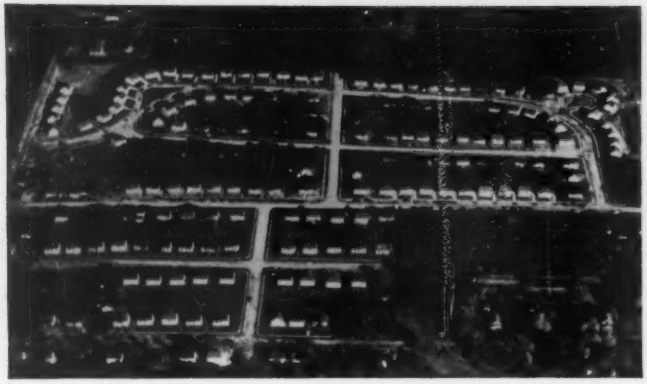
Following this pattern, Lakewood Water and Power Co. uses Byron Jackson Submersibles to place all pumps underground and eliminate old-fashioned pump houses. No pump buildings will mar the residential areas or take valuable space from the 153-acre shopping center. Water for Lakewood and neighboring communities is supplied from wells using BJ "packaged" pumping stations submerged below the surface, with pressure tanks and piping wholly or partially underground. These BJ Submersible Pumps—proved in hundreds of municipal installations—greatly reduce real estate and construction costs, need no daily maintenance, and are the best answer to flood, fire, sabotage and other disaster conditions.

Lakewood's 70,000 residents will be unaware of silent submersible pumping stations such as this one beneath the street. Note control panel located in island at right.

Find out how BJ Submersibles can benefit your water supply program. Contact your local Byron Jackson office or write direct.

Byron Jackson Co.
Since 1872

P.O. BOX 2017, TERMINAL ANNEX, LOS ANGELES 54, CALIF.
OFFICES IN PRINCIPAL CITIES



576 Weekly Calls...

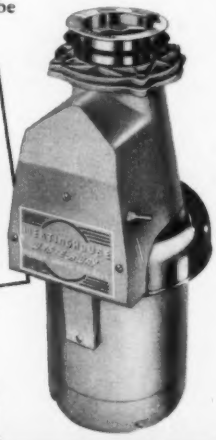
THE GARBAGE MAN won't MAKE

The photograph above shows part of a 576-home project in Cuyahoga Falls, Ohio, where no garbage man will ever call.

That's progress . . . and a real saving in manpower, too . . . because a Westinghouse Waste-Away® Food Waste Disposer is being installed in each kitchen. Down the drain goes food waste, before it becomes garbage, shredded to the right consistency and flushed away with the proper amount of water.

Yes, the Waste-Away is the ideal solution to a real problem—that of food waste disposal. It is safe, clean, efficient—engineered by Westinghouse for years of trouble-free service.

Why not consider this method of disposal for your own community? We will be happy to consult with you. Just write.



Westinghouse
WASTE-AWAY
ELECTRIC FOOD WASTE DISPOSER

. . . of course, it's electric!

WESTINGHOUSE ELECTRIC CORPORATION
Electric Appliance Division · Mansfield, Ohio

YOU CAN BE SURE..IF IT'S Westinghouse

Other Catalogs

Write directly to the manufacturers, or use coupon on Page 23

Heating Ketteles with Fire-Proof Tops

261 White heating kettles for street-repair material with their fire-proof tops reduce fire hazard. The asphalt and tar kettles give long life and satisfaction. Available are plain models or those with hand- or engine-driven spray pumps for patching pavement, in gallon capacities of 65, 110, 165, 220 and 300. For circulars, write to the White Mfg. Co., Elkhart, Ind.

Non-Clog Pumps

262 The Aurora Pump Co., 66 Loucks St., Aurora, Ill., will send you its condensed catalog *M*, describing its non-clog pumps in vertical and horizontal styles, or bulletin 121 which describes its Type KGG horizontal. These pumps are used for semi-solids, wastes, municipal sewage plants, lift stations, buildings, and other duties which require handling heavy liquids and liquids with solids.

This Machine Scoops, Loads, Digs, Dozes

263 For snow, leaves, dirt, trash, sand and gravel, the new Skyline "90" loader will help keep your city clean all year 'round. It scoops, loads, digs, and dozes. For further information write to The Skyline Corp., 1521 McLean Blvd., Wichita, Kans.

Sluice Gates

264 Chapman sluice gates, available in standard sizes to meet nearly all installation requirements, can be equipped with any required type of operating control. Chapman motor units are factory wired and ready to operate on installation. Manual control is also provided for use in case of power failure. Full information may be obtained from The Chapman Valve Mfg. Co., Indian Orchard, Mass.

Cast Iron Pipe For City Streets

265 Cast iron pipe can withstand external loads imposed by heavy fill and unusual traffic loads; its toughness enables it to withstand impact and traffic shocks; its beam strength helps it to sustain a load of 15,000 pounds, and its bursting strength to withstand more than 2,500 pounds per square inch of internal hydrostatic pressure. For full information on cast iron pipes for city streets, write to the Cast Iron Pipe Research Assoc., 122 S. Michigan Ave., Chicago 3, Ill.

Fence Bolted on Inside

266 The Realock fence has fittings, hinges, and locking devices with bolts on the inside to make it secure from tampering. This product, heavily galvanized by a special process, is weather-resistant, extra strong and durable, and easy to maintain. For full details and free estimate, contact the Wickwire Spencer Steel Division, 361 Delaware Ave., Buffalo 2, N. Y., or The Colorado Fuel & Iron Corp., Continental Oil Bldg., Denver 2, Colo.

Planned Lighting Systems Decrease Night Accidents

267 The planned lighting systems furnished by the Westinghouse Electric Corp., P. O. Box 868, Pittsburgh, Pa., will insure your community of protection against night accidents. The firm's mercury-vapor lights increase visibility and add to the protection against burglary. For further information, write to the company.

(Please Turn to Page 29)

Catalogs for You

Write directly to the manufacturers, or use coupon on Page 23

Power for Disaster Communications Service

268 Dependable power for disaster communications service can be supplied by the Leece-Neville alternator system. A Leece-Neville a.c.-d.c. alternator system delivers 25 to 35 amperes with the engine idling. Current is delivered at a constant, fixed voltage. For information on this system to power vital communications in case of disaster, write to Dept. 14 of the Leece-Neville Co., Cleveland 14, Ohio.

Installs Engines

269 The Cooper-Bessemer Corp., engine builders, of Mount Vernon, Ohio, and Grove City, Pa., will send details on its development for saving money in power production. Among the firm's developments have been gas diesel, and gas engine supercharges so that more combustion heat can go to produce power, leaving less waste heat to be dissipated. The company points out that the cost of cooling equipment, piping, and installation is greatly reduced.

Pumps Available for the Small Water Works

270 For these well-pumping duties where the requirements are no greater than a maximum of 600 gpm. the straight-lift Jensen Jack has application. Complete details on how the unit works, its power requirements, and its efficiencies at various lifts are outlined in catalogs available from the firm. Write to the Jensen Brothers Mfg. Co., Coffeeville, Kans.

Cut Sweeping Costs

271 Sweeping costs are decreased by 75% with the Wilshire power sweeper, according to the manufacturer, the Wilshire Power Sweeper Co., 526 W. Chevy Chase Drive, Glendale 4, Calif. This machine, in one simple operation, picks up everything from cigarette stubs to soda-pop bottles. For a free on-the-job demonstration, contact your nearest Wilshire dealer, or write to the firm.

High-Pressure Fire Pumps

272 According to The F. E. Myers & Bro. Co., Ashland, Ohio, the high-pressure operation given by its fire pumps plus its silver fog fire guns, eliminates damage resulting from large quantities of water. Myers giant bulldozer fire pumps are completely self-oiling, and are available in several models. Among the features are roller bearings, large double main gears, water and oil seals, and a precision-machined crankshaft. Write to the firm, asking for Catalog FP 48.

Warning Signs

273 The Thomas E. Collins & Co., 4661 Maryland Ave., St. Louis 8, Mo., will send a circular describing its double-faced accident prevention signs of enamel fabric. The firm says its product with clear-cut letterings will not crack, peel or break, and that its light weight permits safe, easy posting. Reflectro letters for night use also are available.

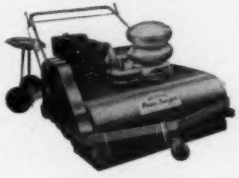
FWD Trucks

274 The Four Wheel Drive Auto Co., Clintonville, Wis., manufacturer of heavy-duty trucks, will send information on its equipment, including models which range from 14,500 to 60,000 GVW for 4- and 6-wheel drives. When writing, ask for the free FWD Model Book.

(See Page 34 for More Bulletins)

MODEL 1000-N
Super Heavy Duty with forward and reverse drive, 100% visibility.

CUTS Your SWEEPING COSTS 75%



MODEL 800 America's favorite Heavy Duty Sweeper with finger-tip dual control. (Sulky optional.)

Are costs getting the best of you? Is manpower a problem? Forget it—get a WILSHIRE Power Sweeper—the one-man gang that picks up everything from cigarette butts to pop bottles in one easy operation—does it so efficiently that users from coast to coast report reductions in cleanup costs of *75% and more.* Make us prove it—with a FREE demonstration on *your* job. Write today for full information.

FACTORY TESTED...90-DAY GUARANTEE

For dealer nearest you write Dept. C-3.

Wilshire
POWER SWEEPER CO.
526 W. Chevy Chase Drive
Glendale 4, Calif.

"Cat"

With a one-way haul distance of 150 ft., this "Caterpillar" Bulldozer handling 70 truckloads per day, spreads, packs and covers 16 tons of garbage and trash every 8 hrs. for the Memphis Dept. of Public Works. Operator M. I. Trimm says, "When we first got this tractor I operated in mud and water up to the top of the tracks during our wet season, and now my 'Cat' Bulldozer has 1,100 hours on it. Haven't had a wrench on it and don't intend to for quite a while!" Price of a standard "Caterpillar" D8 Tractor is $15,000; No. 8S Bulldozer, $1,710; No. 24 Cable Control, $750, f.o.b. Peoria. Prices subject to change without notice.

"CATERPILLAR" BULLDOZER EXTRA FEATURES

1. Tractor and 'dozer *broken to harness*, and a size for every need.
2. Moldboard curvature for active, *rolling*, higher production loads.
3. Box section side arms—extra thick at points of greatest stress.
4. Choice of straight or angling type of blade, simple to maneuver and easy to adjust or detach.
5. Your choice of hydraulic or cable controls.
6. The power of the "Caterpillar" Diesel Engine is geared to blade *capacity*.

BULLDOZER...

AMERICA'S ALL-PURPOSE TOOL

THE Department of Public Works, Memphis, Tenn., gets best results in its sanitary landfill operations by using this great "Caterpillar" D8 Tractor with matching No. 8S 'Dozer. W. H. Hugo, General Superintendent of the Department, says this about his hard-slugging bulldozer: "Nobody needs to tell you the value of these machines. Their work through the years has thoroughly sold us on these units!"

The "Caterpillar" Diesel Tractor and Bulldozer compacts and spreads garbage and refuse in jig time, then covers it with two feet of fill. By sundown there's nothing in sight but clean earth, giving double protection to the community's health. The "Caterpillar" dealer in your territory will be glad to show you a motion picture explaining the advantages of sanitary landfill disposal, and he can give you other helpful material on this operation too.

"Caterpillar" Bulldozers give you matched design, with tractor and 'dozer built to work together. This rugged unit is a bear at meeting work schedules. Sturdy construction and quality materials enable it to keep punching full time without down-time, and the special steel cutting edge of the blade hammers through the toughest going. Perhaps most important of all, precision methods used in "Caterpillar" factories build extra years of life into "Cat" equipment.

For help with your equipment problems, see your "Caterpillar" dealer *now*. Today's expanding military program has high priority. But it is recognized that our national preparedness depends upon stepped-up civilian production too. We must have more lumber, coal, food and essential ores. We must continue to build and improve America's vital network of highways. So your "Caterpillar" dealer is especially interested in meeting your needs—through equipment replacement and by exercising his working partnership with you to keep the machinery you have on the job.

CATERPILLAR, PEORIA, ILLINOIS

CATERPILLAR

REG. U. S. PAT. OFF.

DIESEL ENGINES • TRACTORS • MOTOR GRADERS • EARTHMOVING EQUIPMENT

Barber-

MODEL 543

BUCKET LOADER...

SAVES man power-truck time-money

LOADS all free-flowing materials at 3 yrds. per minute

Cost studies prove that nothing can compete with a Bucket Loader in lowest cost loading from stock piles to trucks.

The B-G constant flow principle virtually eliminates the human element — guarantees the same hourly production all day long, whether the operator is fresh or tired out.

The new Barber-Greene Model 543 is the last word in loading economy. Backed by over a billion cubic yards handled by its predecessors, this machine is ready to cut your loading costs.

The new hydraulically controlled trimmer-conveyor combines with time-proved B-G advantages — such as the Spiral Feed, Cleanup Scraper, automatic Overload Release and Floating Boom — to save appreciable manpower on every job. With its 15 m.p.h. road speed, the 543 can get to the job fast and move from pile to pile in a hurry. It is built for high production through years of low-cost service. In addition, it is convertible to a Snow Loader for year-round usefulness.

see your BG distributor

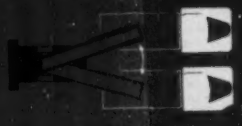
Greene

for lowest cost per yard-in-truck

THE ONLY LOADER WITH TIME-SAVING

HYDRAULIC TRIMMER

NEW VERSATILITY



NEW ROADABILITY

send coupon for details

Today, with manpower and truck time becoming more and more costly, the B-G 543 Loader offers you a proved way to save money while speeding up your loading operations. Use this coupon to get full information and start planning for the day when you'll have a Model 543 cutting your costs.

BARBER-GREENE COMPANY

AURORA, ILLINOIS, U.S.A.

BARBER-GREENE COMPANY 194

AURORA, ILLINOIS

Send bulletin on the 543 Loader. ☐

Please have representative call. ☐

Name .....

Firm Name .....

Address .....

City ..... State .....

More Literature

Write directly to the manufacturers, or use coupon on Page 23

An Investment For Play-Loving Youth

275 Hot galvanized pipe to last a lifetime is used by the Standard Playground Equipment Co., Anderson, Ind., in constructing safe and dependable playtime material for children. Among the products are all-metal slides, climbing towers, merry-go-rounds, basketball equipment, swing sets, horizontal ladders, and giant strides. Write for your copy of the circular which describes these products.

Trailer-Mounted Insect Killer

276 You can wheel this heavy-duty Rex fogger around behind a jeep, passenger car, or truck, and you get improved insect killing performance through a specially designed boiler mechanism. Write to Haberman Industries, Inc., 306 Gaston Bldg., Hastings, Nebr., for a bulletin describing the unit.

Welded Steel Reservoirs

277 Welded steel reservoirs, produced by the Chicago Bridge & Iron Co., 2127 McCormick Bldg., Chicago 4, Ill., resist cracks or leaks, even under limited uneven settlement. Their smooth welded steel surfaces are easier to paint to insure low-cost maintenance. The reservoirs are built in capacities up to 10,000,000 gallons. The company also manufactures elevated steel tanks of welded construction in sizes from 15,000 to 50,000 gallons with ellipsoidal bottoms, and from 500,000 to 3,000,000 gallons with radial-cone bottoms.

Digger-Crane-Shovel Gives Multiple Performance

278 The Hopto digger-crane-shovel uses the power you already have and gives multiple performance at lower cost. Hydraulically operated, the trailer-type Hopto attaches in 60 seconds and operates from the power take-off of any tractor, jeep, or truck. It reaches out 14 feet and 6 inches in a 180-degree swing, moves 15 to 30 yards of earth an hour, lifts over 2,000 pounds, and digs, ditches, loads, and handles materials ahead of production schedules. A copy of Bulletin 19503 may be obtained from the Badger Machine Co., Dept. D, Winona, Minn.

The Answer to Your Soil Compaction Problems

279 The Barco Pegson gasoline rammer is a simple, rugged, and portable device which may be the answer to your soil-compaction problems. This machine operates on lifts of 12 to 20 inches, regularly turns out 160 to 180 cubic yards of compacted fill per eight-hour day, and is unaffected by cold or heat. Full details are available in Instruction Book BR-605 issued by the Barco Mfg. Co., 1801 Winnemac Ave., Chicago 40, Ill.

How Many Hydrants In Your Store Room?

280 Towns all over the country are checking their water-works stores to make sure they will not be short of materials, such as hydrants, which are used at the rate of 40,000 a year. Mathews fire hydrants feature rugged operating thread and working parts quickly replaceable. They are offered by The R. D. Wood Co., Public Ledger Bldg., Independence Square, Philadelphia 5, Pa.

Airport Lighting Bulletin

281 The Line Material Co., Milwaukee 1, Wis., has prepared a new bulletin on *Medium Intensity Airport Lighting Equipment* for small airports and for secondary runways and taxiways at large airports. This publication includes instructions for installing three systems. For complete information, write to the Line Material Co., Airport Lighting Div., E. Stroudsburg, Pa., and ask for Bulletin 19090.

OIL BLAZE
HOW SCOTT AIR-PAK SAVED THE DAY!
DREAD OF ALL FIREMEN IS FIRE AT AN OIL REFINERY, OR CHEMICAL PLANT.
LOOKS TOUGH JIM. WE'VE GOT TO GET IN THERE... AND FAST!
SCOTT AIR-PAKS ENABLE WET WATER FOG TO BE "DELIVERED" RIGHT ON THE BLAZE.
THOSE MEN ARE REALLY GETTING IN. THEY'RE KNOCKING IT DOWN ALREADY.
PROTECTED BY SCOTT AIR-PAKS, WORKING IN COMPARATIVE SAFETY, FIREMEN QUICKLY CONTROL AND EXTINGUISH WITH A MINIMUM LOSS.
BY GOLLY, THE COMBINATION OF WET WATER FOG AND AIR-PAKS SURE GOT RID OF THAT ONE IN A HURRY!

Supplying fresh, cool air — not oxygen, Scott *Air-Pak* provides complete breathing protection, even in petroleum atmospheres where the use of oxygen is an added hazard.

Scott *Air-Pak*, made in several sizes and types, enables industrial and municipal firemen to fight fires quickly and safely *at the source*, minimizing fire damage. Thousands of Departments are setting enviable records for life and property conservation — with Scott *Air-Pak*.

Write today **for full details on the Scott Air-Pak in Bulletin No. 510.**

Scott Senior Sling Pak (above) — extra light and small, for short duration uses.

ESTABLISHED IN 1937 Scott FOR SAFETY—FOR SERVICE

Have you seen the new Scott DEMAND inhalator?

SAFETY EQUIPMENT DIVISION

SCOTT AVIATION CORP.

191 ERIE ST. LANCASTER, N. Y.

CANADA: SAFETY SUPPLY CO. BRANCHES IN ALL PRINCIPAL CITIES
EXPORT: SOUTHERN OXYGEN CO., 157 Chambers St., New York 7, N. Y.

The new Sanistand fixtures and the wall-hung Buena Lavatories show how a public rest room can be made more efficient, up-to-date and attractive. Both fixtures are ideal to use in remodeling work.

Give your rest rooms the utmost in modern sanitation and convenience

. . . modernize with the SANISTAND FIXTURE

EVERY manager responsible for the maintenance of women's public rest rooms is concerned with keeping them just as sanitary, convenient and pleasing to patrons as is possible. Hundreds of installations prove that the best place to start rest room remodeling is with the Sanistand fixture—the new American-Standard urinal for women.

This new fixture, which women like because it can be used without physical contact, is made of non-absorbent, easy-to-clean, genuine vitreous china, in white and a variety of colors. In modernization, it can usually replace a water closet and is adaptable to either hand or foot flushing.

Reports from maintenance managers where Sanistand fixtures have been installed, show that rest room traffic has been speeded up . . . in some cases rest rooms now handle twice the number of women with less confusion.

For more information on this new fixture, just send in the coupon below for the new Better Rest Room Guide, and for the Room of the Month Ideas for December which gives you complete details on the rest room shown here. **American Radiator & Standard Sanitary Corporation,** Dept. AC-3, Pittsburgh 30, Pennsylvania.

AMERICAN-Standard

First in heating . . . first in plumbing

American Radiator & Standard Sanitary Corporation
Dept. AC-3, Pittsburgh 30, Pa.
Please send me, without obligation, your Better Rest Room Guide and the December Room of the Month Ideas folder.

Name.....

Address.....

Firm.....

City..... State.....

Look for this AMERICAN-Standard HEATING · PLUMBING *Mark of Merit*

Serving home and industry: AMERICAN-STANDARD • AMERICAN BLOWER • CHURCH SEATS • DETROIT LUBRICATOR • KEWANEE BOILERS • ROSS HEATER • TONAWANDA IRON

ACIPCO

When you buy anything you want the best quality you can get for your money. Our trade-mark cast on our products gives you this assurance. The trade-mark "ACIPCO" means the materials used in manufacturing our pipe are warranted to be first class and the workmanship is guaranteed to be of finest quality.

As America's largest individual cast iron pipe foundry, ACIPCO manufactures a complete line of cast iron pipe and fittings in diameters from 3 in. to 48 in., inclusive. The pipe which is made by the Mono-Cast centrifugal process is equipped with any of a wide variety of joints including Bell and Spigot, Doublex Simplex, Molox Ball and Socket, Roll-On-Rubber Ring, Screw-Gland, and Flanged. All ACIPCO pipe is manufactured under close control to meet nationally recognized standard specifications.

Being cast iron, ACIPCO pipe enjoys an enviable reputation. Cast iron pipe has had over three hundred years of service abroad and more than one hundred years of service in the United States. It serves equally well beneath crowded city streets or in cross country installations.

Address the ACIPCO office nearest you.

AMERICAN CAST IRON PIPE COMPANY

Birmingham 2, Alabama

Dallas Houston El Paso Pittsburgh Kansas City New York City
Chicago Minneapolis Cleveland Los Angeles San Francisco Seattle

Progressive Civic Officials are Getting the Facts About

Hotpoint's Municipal Plan of Food-Waste Disposal

Modern-minded municipal officials are investigating the Hotpoint Municipal Plan of Food-Waste Disposal. Highly satisfactory reports from numerous communities, which have dispensed with the "can and wagon" garbage collection system, prove the values in the Hotpoint plan.

Study these advantages made possible by the Hotpoint Disposall® Food-Waste Disposer. If you would like to provide your community with a modern, sanitary, economical method of disposing of food-waste before it becomes garbage, Hotpoint will gladly present the Hotpoint Municipal Plan—based on experience and written specifically for municipal officials.

- *A convenient, new and modern food-waste removal system.*
- *Health protection to the members of all families.*
- *Fly and rat pest reduction.*
- *Garbage collection cost reduction.*
- *More digestion gas for use and sale.*
- *Elimination of food-waste before it becomes garbage.*
- *Elimination of alley garbage can.*
- *Elimination of garbage collection problems.*
- *Elimination of garbage odors.*
- *True sanitation for your town.*

And—it saves you money!

Write to Hotpoint Disposall Dept., 5600 West Taylor St., Chicago 44, Illinois, for all the facts.

The Hotpoint Disposall food-waste disposer is easy to install in any sink . . . convenient . . . safe . . . odorless and economical. Simple to operate . . . keeps kitchens, sinks and hands clean. Does not overload or clog sewer systems. Can also be used with septic tank.

Hotpoint Inc.

(A General Electric Affiliate)

5600 West Taylor Street, Chicago 44, Illinois

ON heavy lifting jobs and scattered city maintenance work, requiring frequent cross-town moves, Koehring Truck Cranes roll along at traffic speeds up to 35 m.p.h. — get there fast, start work sooner, move on to next job quicker. There's no waiting for trailer, no loading and unloading delays, no planking with these mobile, rubber-tired units.

With the 10-ton Koehring 205, illustrated, maximum boom reach is 85 feet, with jib. Long reach and heavy lift capacity give plenty of operating stability for handling big clamshell or dragline buckets on a wide work range. This 205 is also quickly convertible to a dual-purpose boom for either ½-yard shovel dipper or hoe.

Bigger Koehring 304 Truck Crane safely lifts up to 25 tons, and has a maximum boom reach of 110 feet, with jib. Readily changed from crane to clamshell, dragline, pile driver, ¾-yard shovel or hoe, it also offers 35 m.p.h., "around-town" mobility to help you cover more work assignments with one unit. Other Koehring Crane sizes to 79½ tons — excavators to 2½ yards.

Whenever you consider cranes or excavators, be sure to measure all information by "Koehring work capacity". Your Koehring distributor has specific facts and figures that will let you prove for yourself the biggest time and money-saving advantage. See him soon.

CK21A

STABILIZE SUB-GRADES Where pavement, sidewalks, curbs, gutters are beginning to settle, try this low-cost method. Koehring Mud-Jack®, pumps inexpensive soil-cement slurry into small holes drilled through slab, raises structure to original level, leaves firm, lasting support. Ideal for city maintenance. No traffic detours necessary. Ask your Koehring distributor about Mud-Jacks today.

KOEHRING HEAVY DUTY

KOEHRING

COMPANY • MILWAUKEE 16, WIS.

SUBSIDIARIES: JOHNSON • PARSONS • KWIK-MIX

TRENCHES at 1 1/2 to 3 1/2 cu. yds. per minute

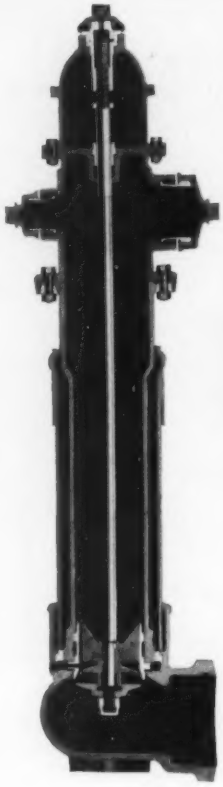
WITH 30 digging feeds, this Parsons 250 Trenchliner® excavates 1½ to 3½ cu. yds. per minute, depending on materials, depth and width of trench. In all soils short of solid rock you get clean-bottom, smooth-walled trenches 16 to 42 inches wide, and up to 12½ feet deep. For trenching along curbs, pole lines, or next to buildings in narrow streets and alleys, digging boom shifts across full width of machine, cuts to within 11 inches of side obstructions. Arc-type spoil conveyor dumps on either right or left side. Belt is instantly reversible in direction; conveyor shifts by power through machine in less than a minute. Arc provides sufficient discharge height for loading directly into trucks, or gives low-level drop for close-to-trench deposit. For more complete information on 250 Trenchliner performance, see your Parsons distributor. He can also show you other Trenchliner sizes, on crawlers or rubber tires, for digging 5 inches to 6 feet wide. See him, or write us TODAY.

ONE-MAN bituminous mix plant

HERE is a versatile, fast-batching bituminous mixer that fits any production problem, sets up anywhere for economical one-man handling. Kwik-Mix 10 and 14 cu. ft. sizes are readily adaptable as stationary overhead plants. Single operator controls charging, mixing and discharging without leaving platform. Skip, receiving aggregates from truck at ground level, is raised by power up an extension track to charge drum. Pug-mill mixing action, uniform oil distribution, and accurate temperature control, assure even-texture mix every batch. With non-tilting drum and 7-second discharge, operator easily loads mixed batch into trucks. As portable units mounted on pneumatic tires, these mixers handle direct pouring on patch work, load wheelbarrows, or discharge to conveyor belt for stockpiling. Special tower loader attachment also lets you load directly into trucks from ground level. Your Kwik-Mix distributor can show you many more cost-cutting ideas. See him, or write us now for catalog.

PARSONS COMPANY • NEWTON, IOWA
KOEHRING SUBSIDIARY

KWIK-MIX COMPANY • PORT WASHINGTON, WIS.
KOEHRING SUBSIDIARY



Simplicity of design

The minimum of moving parts with rugged construction gives you a dependable hydrant with the minimum of maintenance. For instance, the drain valve, an integral part of the valve stem, is automatic and requires no adjustments.

MATHEWS HYDRANTS

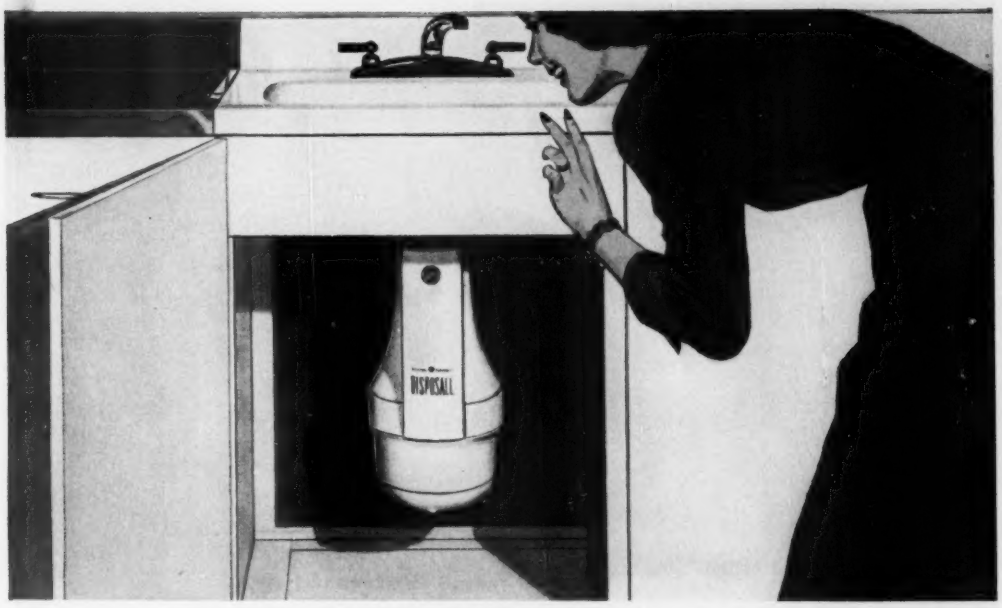
Made by R. D. Wood Company

Public Ledger Building, Independence Square
Philadelphia 5, Pa.

Manufacturers of "Sand-Spun" Pipe
(centrifugally cast in sand molds)
and R. D. Wood Gate Valves

Mathews Modernized Hydrants offer these advantages

Operating thread only part needing lubrication • Stuffing box cast integral with nozzle section—positively leakproof • Head turns 360° • Replaceable head • Nozzle sections easily changed • Nozzle levels raised or lowered without excavating • Protection case of "Sand-Spun" cast iron for extra strength, toughness, elasticity • A modern barrel makes an old Mathews good as new • Available with mechanical joint pipe connections



Opening the door for a friend of the community!

Meet the latest, greatest friend of housewives —of sanitary officials—of communities everywhere.

Meet the sure, powerful enemy of garbage —of the filth and disease that garbage breeds.

Greet the new, compact, efficient General Electric Disposall®—designed to fit practically every sink . . . built for years and years of dependable operation!

There's everything new and better about this food-waste shredder—from the all-white, kitchen-bright exterior—to the smallest working part. The shredder and rotating impellers, made of one of the toughest alloys known, will really grind food waste—from rubbery fruit skins to the most stubborn beef bones.

G-E engineers have added safety factors—including the strength to prevent mechanical breakdown if foreign objects of glass or metal should be dropped in accidentally with food wastes.

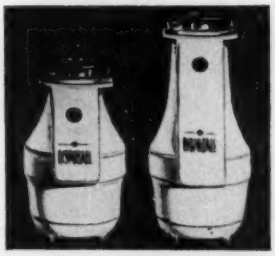
There's built-in economy, too! For, on a yearly average, this G-E Disposall will use less electricity than an electric clock—will use less water than is now required to clean sinks, sink strainers and to flush out garbage containers. And, because it is built and designed for a long life with little or no maintenance, the actual owning cost of a Disposall has been found to average as little as 10¢ per unit per year.

First, last and always, though, the Disposall means SANITARY PROTECTION. It shreds food wastes to small, uniformly sized particles and discharges them at an even rate—in the combination found best through 15 years of G-E experimentation. And these particles are washed away in water with a scouring action that keeps traps and pipes whistle-clean.

Whether wastes are disposed of through sewer or septic tank, the G-E Disposall preserves the full benefits of the sanitary plumbing system—all the way from sink to sewage treatment plant!

Truly, there is no food-waste shredder that can match the new G-E Disposall in design, in performance, in dependability.

As guardian of the community, of its health, safety and economy, you will surely want to open the door for a great friend of the community—the new G-E Disposall!

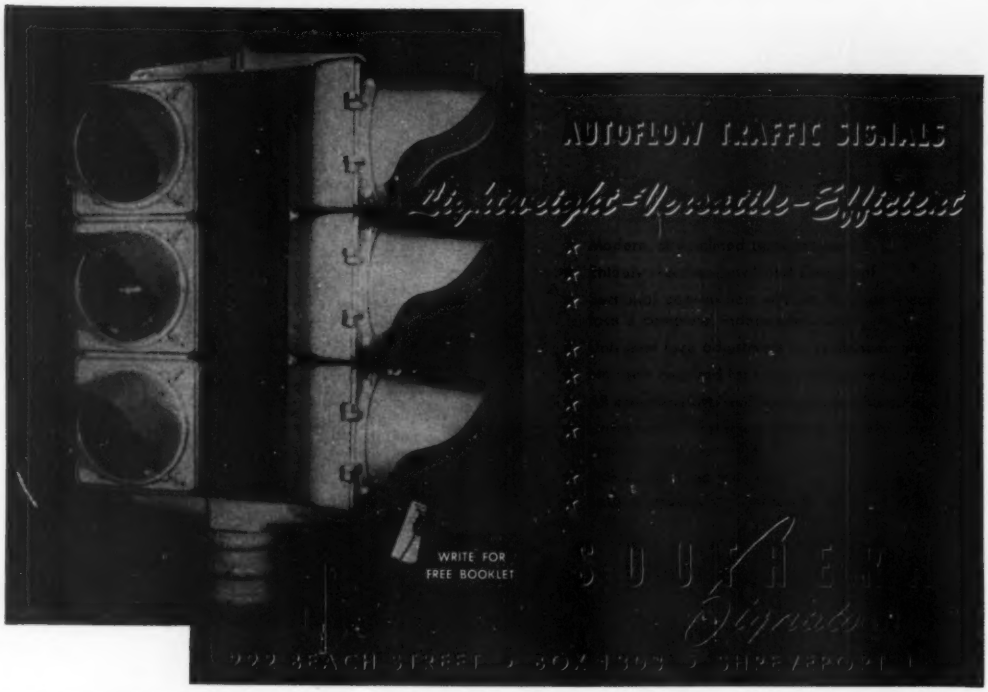


New, streamlined G-E Disposall is available in two models. Quick, easy installation can be made in practically every sink. For further information about the Disposall method, simply write to Department AC 351, General Electric Co., Bridgeport 2, Conn.

G-E DISPOSALL

You can put your confidence in—

GENERAL ELECTRIC



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Capacities ¼ to 3 Yards . . . Ask for Bulletin No. H-850

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give better service for

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1. *Discs will not* tip into the waterway since beams are located in a vertical position.

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3. *No uneven wear of seat rings* because the downstream disc is held securely in its relative position when throttling the flow through the valve.

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OK CHAMPION
POWER SEWER
CLEANER

DON'T LOSE Sewer Capacity

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OK Champion cleaners are regularly clearing sewers all over the world. New improvements make them better than ever. Send for literature.

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Please send information on how the Improved OK Champion Power Sewer Cleaner cuts sewer cleaning costs.

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is tamper-proof

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The industrial acids and corrosive fluids discharged from modern factories have no effect on Vitrified Clay Pipe. Clay is completely immune to any form of corrosive chemical activity, whether it's sewer gas, industrial waste, or the destructive acids found in sewage. Today, with chemistry involved in nearly half the nation's total production, it's more important than ever to install sewerage and drainage lines that are chemically inert — proof against the acids and soil conditions of today . . . and of tomorrow. *Every* city of *every* size needs Vitrified Clay Pipe — the *only* pipe that never wears out.

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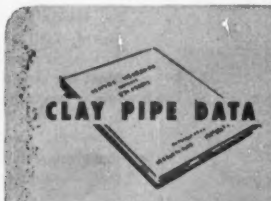
SPECIFY *Vitrified* **CLAY PIPE**



WRITE FOR DETAILED INFORMATION

Additional information and data on Vitrified Clay Pipe, Wall Coping and Clay Flue Lining sent FREE on request. State your specific questions. Simply contact the regional office nearest you.

CLAY PIPE NEVER WEARS OUT!

C-151-10

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with the

new Sherman Power Digger

Patented, actuated bucket gives you selective digging action, better loading, greater versatility.

All-hydraulic action—made possible by heavy-duty hydraulic cylinders—assures efficient performance.

SPECIFICATIONS

Shovel reach below ground surface	8 feet
Digger reach behind tractor	10 feet
Swinging arc	140°
Trench width, standard digging shovel, single cut	18 inches
Digging shovel capacity	3.5 cu. feet
Loading shovel capacity	5 cu. feet
Loading clearance, digging shovel, loaded	7 feet
Loading clearance, loading shovel	10 feet

Standard tractor mounting gives unmatched maneuverability and transportability.

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Digs ditches, trenches, footings, culverts, basements and other excavations.

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Handles roots, rocks, hard clay and oiled road surfaces.

Works well behind the tractor at any angle.

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Actuated bucket raises high enough to load standard dump truck.

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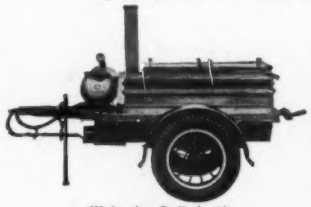
Connery's Style W Heating Kettle Made in 75, 110, 165 and 210 Gallons.



For speedy heating of Tar and Asphalt for road, street and airport runway repairs use Connery's style W kettle, the most efficient heating kettle of its kind.

Write for Bulletin 87.

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T-LOCK AMER-PLATE

THE NEW PROTECTIVE LINING FOR CONCRETE PIPE AND STRUCTURES

T-LOCK AMER-PLATE is a practical sheet lining that provides enduring and economical protection despite extremely corrosive conditions. It is the result of many years experience in the manufacture and application of AMERCOAT protective coatings for all types of industries.

This heavy-duty protective lining is especially adapted for use in sewage lines and structures exposed to severe corrosive action where permanent protection is of vital importance.

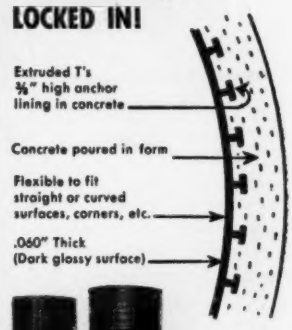
Composed of inert resins and plasticizers, AMER-PLATE is impervious to gases, highly resistant to most acids, alkalies, alcohol, oils, salts and petroleum products, has very low moisture vapor transfer and will not support combustion. Odorless and tasteless, it contains no toxic materials.

T-LOCK AMER-PLATE is applied to the inner forms of concrete pipe, structures and tanks. When the concrete is poured, the Tees are embedded and locked into the concrete and become an integral part of the finished product.

Over 10 years of development and testing have proved it to be practically indestructible in the service for which it is designed.

Amercoat CORPORATION
A Division of
American Pipe and Construction Co.
4809 Firestone Blvd., South Gate, Calif.

Here's how this tough, long-lasting, corrosion-resistant lining is LOCKED IN!


Extruded T's ⅜" high anchor lining in concrete
Concrete poured in form
Flexible to fit straight or curved surfaces, corners, etc.
.060" Thick (Dark glossy surface)

Placing pipe reinforcing cage over T-Lock sheet set up around inner-form.

Example of T-Lock sheet formed around complex structural members.

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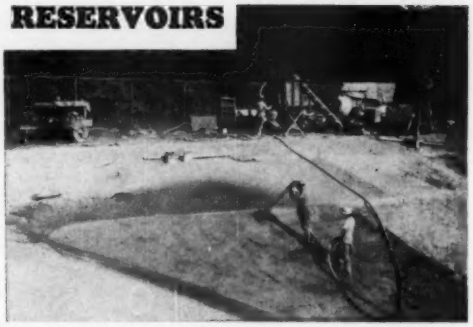

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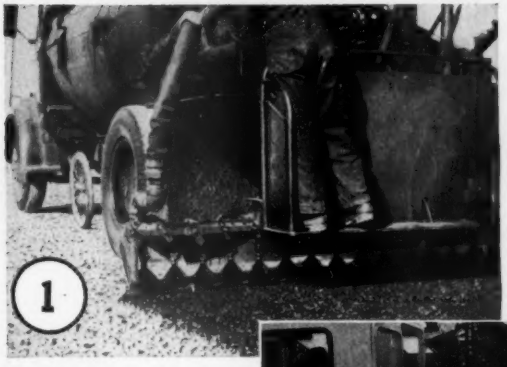

Paving engineers in all parts of the U. S., and in many foreign lands, select BITUMULS—for 3 reasons. It *PENETRATES* throughout interlocked stone without pre-heating. It *MIXES* easily, thoroughly, with damp sands and dense native materials. It *SEALS* with unsurpassed precision.

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Highway Department engineers have placed over two million sq. yds. of BITUMULS macadam — a standard type of pavement since 1931. They know how thoroughly it penetrates interlocked stone.

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Engineers observe the ease with which BITUMULS mixes with damp native aggregates — and gives early pavement stability. Above is a road near Mount Hood, where crushed aggregate is not readily available.

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It COATS DAMP NATIVE MATERIALS

It SEALS

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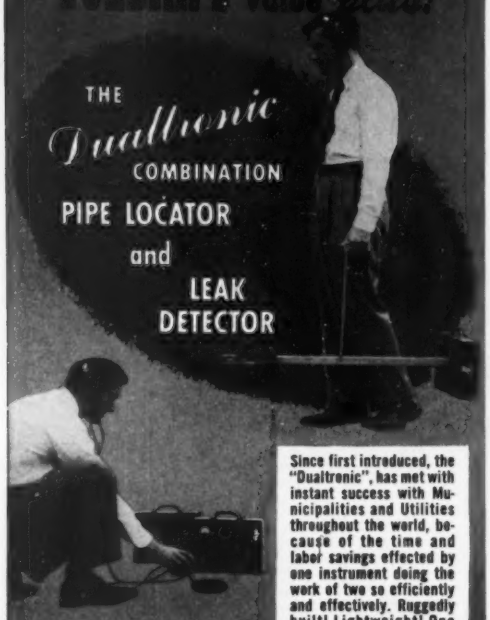
GOLDAK'S value plus!

THE *Dualtronic* COMBINATION PIPE LOCATOR and LEAK DETECTOR



Since first introduced, the "Dualtronic", has met with instant success with Municipalities and Utilities throughout the world, because of the time and labor savings effected by one instrument doing the work of two so efficiently and effectively. Ruggedly built! Lightweight! One man operation! The "Dualtronic", is the answer on how to cut costs 50%!

Proven Ability!

GOLDAK

FEATHERWEIGHT

MODEL 87

PIPE LOCATOR

Guesswork eliminated. Pin-point location of pipes, mains, gates, tees, etc. One man operation, total weight 11 lbs! Strong, positive location signal guaranteed by Licensed circuits and Microtuning, exclusive with Goldak. Lasts a lifetime, guaranteed performance. Write for FREE literature!

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All Sizes All Types

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GO TO THE ROOT OF YOUR WEED PROBLEM WITH THESE DOLGE PRODUCTS

DOLGE 55 WEED-KILLER

Where no vegetation whatever is desired. Penetrates deep down to plant roots and *kills.* Sterilizes the soil. Eliminates backbreaking toil and saves the cost of many labor-hours.

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The efficient way to control weeds on your seeded areas. Works its way down into the roots of broad-leafed weeds, including poison ivy, *but does not injure most turf grasses. Write for literature.*

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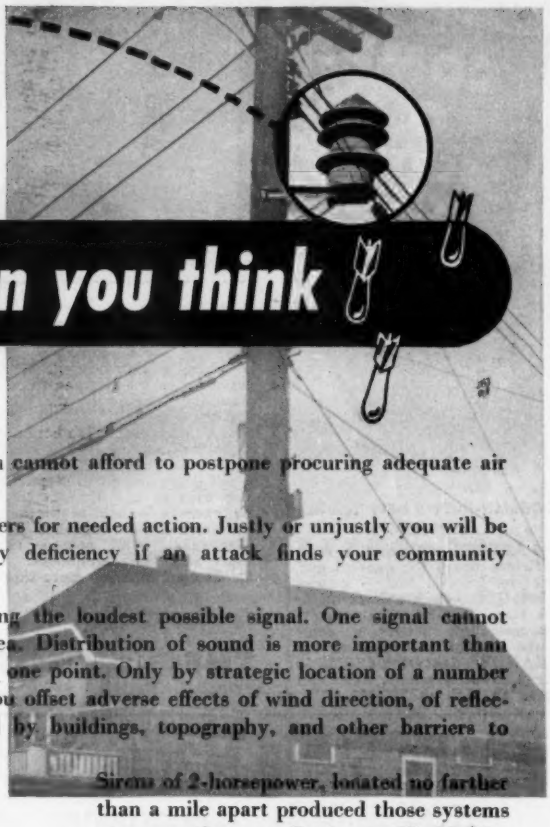
No Caulking

It's LATER than you think



It is enough so that you cannot afford to postpone procuring adequate air raid warning signals.

People look to their leaders for needed action. Justly or unjustly you will be held responsible for any deficiency if an attack finds your community unprepared.

Don't waste time seeking the loudest possible signal. One signal cannot blanket an extended area. Distribution of sound is more important than excessive volume at any one point. Only by strategic location of a number of smaller signals can you offset adverse effects of wind direction, of reflection or blocking caused by buildings, topography, and other barriers to sound travel.

Sirens of 2-horsepower, located no farther than a mile apart produced those systems pronounced most effective in World War II. Federal 2-hp. sirens are economical in first cost, require no maintenance, and weighing but 65 pounds, can be installed with a minimum of material and labor.

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Save MONEY!
Save LIVES!

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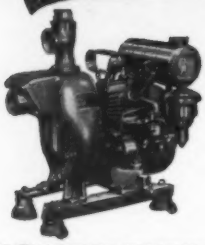

GORMAN-RUPP'S NEW "MIDGET" 1½" PUMP

FASTEST, self-priming, most efficient pump for general use. Weighs but 62 lbs. -- pumps 5500 GPH -- self-primes up to 30 ft. -- non-clogging, sturdy. Gorman-Rupp builds a complete line of pumps from the "HANDY", delivering 8 GPM, to large capacity pumps which deliver as high as 125,000 GPH.

WITH OLD FASHIONED, UNSANITARY METHODS

When a Sanitary Service Operator puts a new Gorman-Rupp Odorless Sanitary Cleaner on the job these are the results:—

1. A disagreeable job becomes pleasant, easy work.
2. Unsanitary methods and unhealthy conditions eliminated. Septic tank cleaning with an O. S. C. unit complies with or exceeds health regulations and requirements. It banishes open tanks, diaphragm hand pumps, shovels and other makeshift equipment.
3. It does each job more thoroughly, in a fraction of the time previously required. For example, 500 gal. tanks are cleaned in 15 minutes, 1000 gal. tanks in 20 minutes.
4. It offers operators profit possibilities far in excess of income with present equipment and methods.
5. An O. S. C. unit has other profitable uses such as transporting water, emergency fire fighting, sprinkling, dewatering, etc.

Show this to Sanitary Service Operators in your community. For complete information write for Bulletin 7-ST-11.

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343 N. Bowman St. Mansfield, Ohio

Lake Shore Markers OF Lifetime Aluminum

CHOICE OF MANY PROGRESSIVE CITIES

•RUSTPROOF •DURABLE •ATTRACTIVE
DAY AND NIGHT VISIBILITY

ILLUSTRATED #21-6 — 6 WAY ASSEMBLY WITH BRACE MARKERS

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LAKE SHORE PATTERN WORKS
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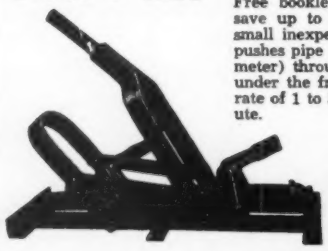
TO INSURE DELIVERY OF SIGNS
PLACE ORDERS NOW!

DON'T LET OLD MAN WINTER STOP Your PIPE INSTALLATIONS

Free booklet tells how to save up to 80% with this small inexpensive tool that pushes pipe (up to 15" diameter) through the ground, under the frost line, at the rate of 1 to 5 feet per minute.



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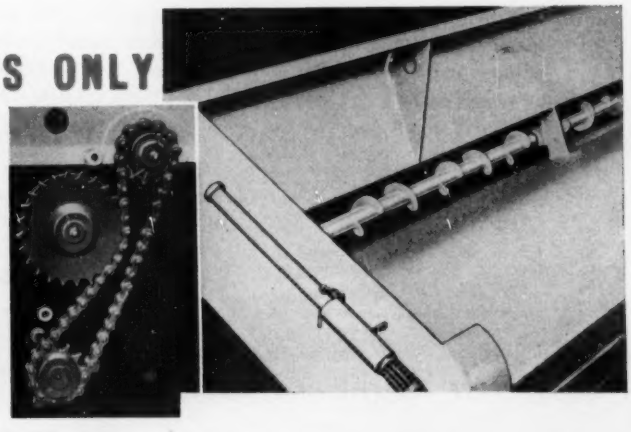
AVAILABLE IN 5 MODELS . . UP TO 12 FEET IN WIDTH

FLEXIBLE KEYBOARD...
of tempered spring-steel permits obstacles in material to drop through without clogging or marring spread pattern.

- NO SHIFTING OF GEARS
  fully automatic, free-wheeling gear box
- INSTANTANEOUS SHUT-OFF
  a one-lever operation
- POWDER FINE CARPET SPREAD TO A 3-INCH DEPTH
  controlled by Micrometer Depth Adjustment
- NO CLOGGING
  oversize particles work through Flexible Keyboard without emptying hopper
- SPREAD HEAVY ON ONE SIDE . . . LIGHT ON THE OTHER
  utilize Taper Attachment for this effect
- TRUCK HITCHES TO SPREADER FROM ANY ANGLE
  positive Locking Automatic Hitch

AUTOMATIC AGITATOR WORKS ONLY WHEN IT IS NEEDED



Agitator driven from feed roll turns automatically in same direction as roll whether spreading forward or reverse, and assumes neutral position without shifting gears when keyboard is closed. Inset shows outer agitator drive mechanism which is completely encased when assembled.

GOOD ROADS MACHINERY CORP. MINERVA, OHIO

Durham to increase efficiency of City Departments with Contour Maps
Mystery
THE DURHAM SUN
Suspense
DURHAM, N. C. THURSDAY AFTERNOON, NOV. 16, 1950
PRICE FIVE CENTS
Council Okays Aerial Contour Map Of City
Move Begun To Combine
State Plumbing, Heating Meet Set
Bids To Be Received On Project

To speed future developments and planning projects, Durham, N. C. is taking to the air for precise contour maps and photographs.

City officials describe the need for the maps as "urgent." They point out that the maps will speed departments in getting out preliminary plan estimates for water, street and sewer improvements. They point out, too, that the maps can be used as a basis for a tax map.

Aero Service will photograph a 35-square mile area and will furnish 5 ft. contour maps for a 31-square mile area. The maps are intended to serve a wide number of uses and will show all buildings, roads, streets, highways, railroads and structures. The cost? Frank L. Dieter, City Planning Director, says *it's a fraction of ground surveys.*

Whatever your map needs—street, sewer, traffic, rapid transit, zoning or other related city planning, consult AERO first. AERO's experience is unparalleled in its field.

TOPOGRAPHIC MAPS • PLANIMETRIC MAPS
PRECISE AERIAL MOSAICS • AIRBORNE MAGNETOMETER SURVEYS
RELIEF MODELS • COLOR PHOTOGRAPHY

AERO
SERVICE CORPORATION
236 E. COURTLAND ST., PHILA. 20, PA.
Oldest Flying Corporation in the World

STRENGTHEN

It's good fire protection practice to be prepared for *maximum* emergencies. That's why more and stronger fire-defense weapons are necessary *now* — *before* the severe service that may come.

Without delay, *your* apparatus and equipment should be measured against the hazards you may face. Have your pumpers the power and stamina to deliver full capacity for long periods of time? Have you plenty of hose-carrying and booster or tanker capacity? Modern ladder trucks — particularly aerial, for ladder-pipe work on upper stories?

Now is the time to make sure of your strength. You'll find your Mack representative ready and able to help. For he can show you the latest in fire-fighting engineering — modern yet proved features in use in leading departments. And he can show you how only first-line apparatus like Macks are *big* enough, *strong* enough, *powerful* enough to depend on for your fire-front defenses.

YOUR FIRE DEFENSES NOW!

Modernize with

Mack
FIRE APPARATUS

MACK MANUFACTURING CORPORATION
Fire Apparatus Division
Long Island City 1, New York

Factory branches and distributors for service and parts in all principal cities. In Canada: Mack Trucks of Canada, Ltd.

ANOTHER MACK FOR COLUMBIA, S. C. This Type 85, 750 gpm pumper makes the 7th Mack put into service by South Carolina's capital city — and another Mack 85 is on order.

TRIPLE COMBINATION PUMPERS — 500 TO 1500 GALLONS . . . SQUAD AND HOSE CARS . . . AERIAL, CITY SERVICE AND QUADRUPLE COMBINATION LADDER TRUCKS

AS THE YEARS ROLL ON

THIS ROAD PAYS OFF HANDSOMELY...

Blending with every landscape and free from glare, roads built with Tarvia* road tar take the strain out of driving. They are self-healing under impacting traffic.

The heat-absorbing qualities of black roads built with Tarvia* road tar make them easier to keep open in winter, as snow and ice melt more quickly. And they are not affected by chemicals used to remove snow and ice.

because

1 Roads built with Tarvia* road tar improve with age. Occasional applications will renew the life of the surface, and replace worn-away material.

2 TARVIA road tar penetrates surfaces and binds together the underlying material. It thus makes possible the inexpensive use of local aggregates.

3 Less TARVIA road tar is required because there are less solvents to be evaporated before the binder becomes effective.

4 TARVIA road tar is unaffected by gasoline, kerosene, or moisture. It retains its original properties.

5 TARVIA road tar holds the aggregate tightly in the surface, and produces a gritty surface which is lastingly skid-resistant.

6 TARVIA road tar may be applied at moderate temperatures, and with ordinary equipment.

The Barrett field man is always at your call for expert practical advice.

Barrett® Tarvia® ROAD TAR

THE BARRETT DIVISION
ALLIED CHEMICAL & DYE CORPORATION
40 Rector Street, New York 6, N. Y.

*Reg. U. S. Pat. Off.

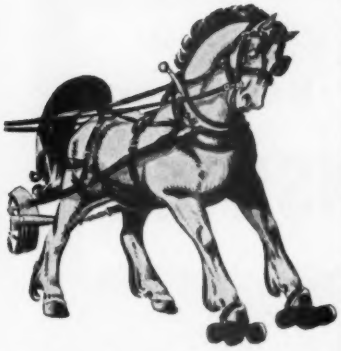
New York • Chicago • Birmingham • Detroit • Philadelphia • Boston • Rochester • Youngstown • Ironton, O. • Syracuse • Buffalo • Bethlehem, Pa. • Portland, Me. Norwood, N. Y. • Oneonta, N. Y. • Elmira, N. Y. • Cromwell, Conn. • Norwich, Conn. In Canada: THE BARRETT CO., LTD., Montreal • Toronto • Winnipeg • Vancouver

No matter how you say it

It Comes Out the Same

Last Year – This Year – Next Year

in 1940 we said

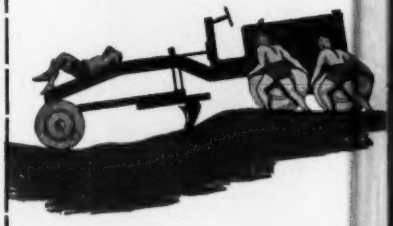


A motor grader without power on the front wheels is like a horse with roller skates on his front feet.

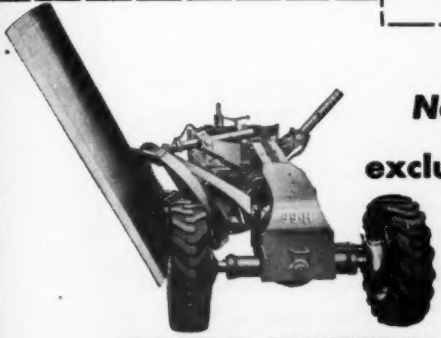
in 1945 we said

It's not in the cards for a grader with rear drive to equal the performance of one with All-Wheel Drive.

in 1950 we said



Don't handicap your horsepower! No grader with a dead front end can possibly deliver maximum power-at-the-blade.



No two ways about it! **Austin-Western's exclusive All-Wheel Drive goes more places . . . does more things . . . moves more material, farther and faster.**

AUSTIN-WESTERN COMPANY, AURORA, ILL., U. S. A.

Austin-Western

For all high pressure testing

THE Cooper-Bessemer intensifier offers new advantages, new economics, wherever pressure testing is desired . . . for boilers, piping, compressor cylinders, pumps, all kinds of pressure vessels and laboratory destruction tests.

Completely air driven, the new intensifier eliminates fire and explosion hazards of motor-driven equipment, and easily develops hydrostatic pressures up to 23,000 psi using air at 90 lbs.

The extreme compactness and portability of the unit is another obvious advantage. It weighs less than 80 pounds, rolls easily to any job or location. Its completeness, versatility and low purchase price will also appeal to you . . . will save you still more dollars!

The intensifier is available in two sizes, —Model 10 for testing with water up to 10,000 psi and Model 23 for testing with oil up to 23,000 psi. For complete information send to any Cooper-Bessemer office for a new bulletin.

SEND FOR THIS BULLETIN!

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Cooper-Bessemer
Corporation
MOUNT VERNON, OHIO — GROVE CITY, PENNA.

New York City Washington, D. C. Bradford, Pa. Chicago, Ill. San Francisco, Calif. Houston, Dallas, Greggton, Pampa and Odessa, Texas Seattle, Wash. Tulsa, Okla. Shreveport, La. St. Louis, Mo. Los Angeles, Calif. Caracas, Venezuela Gloucester, Mass. Calmes Engineering Co., New Orleans, La.

★ ★ ★ *Report to the Nation* ★ ★ ★

A balanced program of essential construction . . . defense and civilian . . . is necessary to build a stronger America.

The Construction Industry has the capacity to perform both . . . . immediately, efficiently, economically!

THE ASSOCIATED GENERAL CONTRACTORS OF AMERICA

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In these critical times, the traditional principles of Construction Industry operations assure the taxpayer and the private buyer full value for their dollar invested in construction:

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NATIONAL HEADQUARTERS, MUNSEY BUILDING, WASHINGTON 4, D. C.

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IS THE CASE WHEREVER AUTOMATIC VOTING MACHINES ARE INSTALLED FOR ELECTIONS

EFFICIENCY—BECAUSE:

1. There are no spoiled ballots
2. Easier and quicker voting
3. Immediate returns
4. Mechanically accurate returns
5. A permanent record

ECONOMY—BECAUSE:

1. Precincts may be consolidated
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3. Printing costs reduced.
4. No expensive recounts

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"Since 1898"

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NEW YORK

1400 Rooms, each with Tub and Shower, from . . .

$3.50

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HOW TO STRETCH A GALLON OF FUEL

17%

Or . . . how one user changed a red-ink profit-and-loss statement to over $34,000 in the black in just 10 months!

The management of an Ohio generating plant did just that by installing a Superior diesel engine . . . after a careful look at the whole diesel engine field.

The overall plant capacity rose 17% per gallon of fuel oil. They got greater BHP per gallon of lube oil. They more than doubled the economy over previous engines. And they successfully beat down rising costs and met the challenge of growing peak loads.

If you are faced with rising operating costs and an uneconomical power supply for electric power generation or direct drives, let us send you bulletins on Superior and Atlas engines using the dependable, economical 4-cycle principle. They are built in sizes up to 1500 H.P.

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ENGINE DIVISION **SPRINGFIELD, OHIO**

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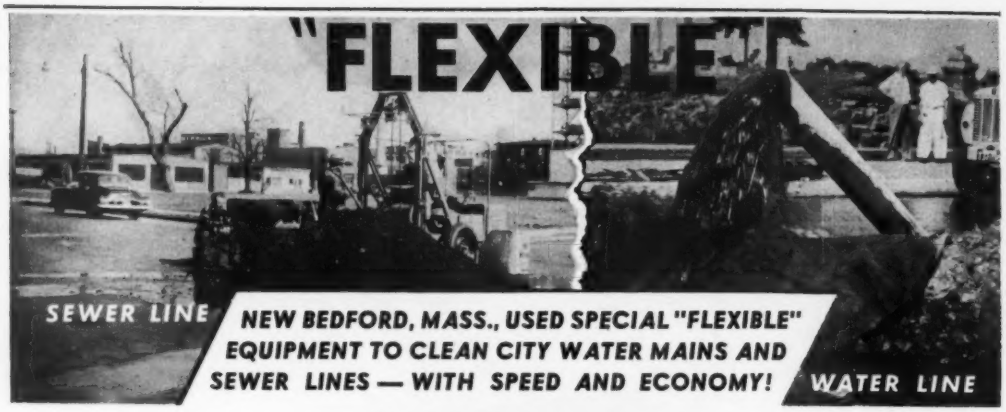
ATLAS Imperial DIESEL ENGINES

NATIONAL OIL FIELD MACHINERY AND EQUIPMENT . . .
SPANG PIPE . . . SUPERIOR & ATLAS ENGINES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SEWER LINE
NEW BEDFORD, MASS., USED SPECIAL "FLEXIBLE" EQUIPMENT TO CLEAN CITY WATER MAINS AND SEWER LINES — WITH SPEED AND ECONOMY!
WATER LINE

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Recommended

with SAFETY... for SAFETY

To reduce fire hazard—awnings, tents, canopies and other canvas equipment can be made flameproof. The use of Flamefoil Guardsman Canvas is the answer. Flamefoil is flameproofed as well as resistant to water, weather and mildew. It is approved by Underwriters' Laboratories, Inc., California Fire Marshal and other leading fire prevention authorities.

Write for complete details about Flamefoil and its uses in reducing fire hazards.

Philadelphia Textile Finishers, Inc., Norristown, Pa.

FLAMEFOIL GUARDSMAN CANVAS for Safety

Manufactured under Patents No. 2,299,612 and 2,544,178. Others pending.

FLAMEPROOFED . . . RESISTANT TO WATER, WEATHER, MILDEW

Only the GRAVELY does so many City Jobs so well!

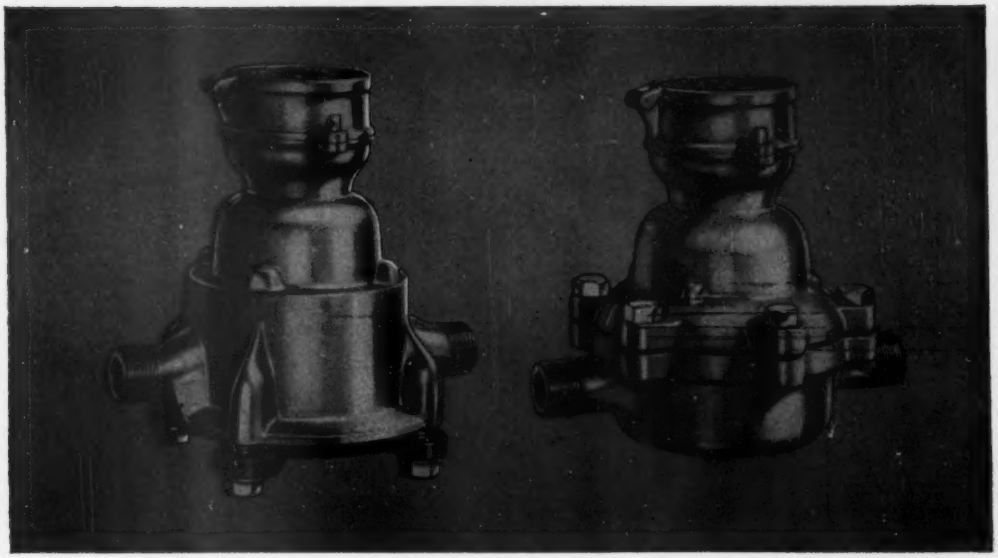
Solve your city lawn and maintenance problems—and save time and money too! . . . The powerful 5-HP. Gravely Tractor does 20 jobs faster, better, easier! 20 tools to choose from for your particular needs, all powered by the same rugged, dependable tractor!

All-gear drive, power reverse, city-tested for 30 years!

"Power vs. Drudgery" tells how Gravely POWER solves your city upkeep and maintenance problems fast! Write for it today!

Gravely Motor Plow & Cultivator Co.
BOX 373 DUNBAR, WEST VIRGINIA

Badger Stands for more than Meters



Badger means complete meter Service

Yes, you'll find every type and size of meters in the complete Badger line . . . but you get *more than meters* from Badger. You get complete meter service: ● Dependable recommendations for every water-measuring need . . . Badger-engineered and precision-built mechanical features that assure you full revenue by unfailingly recording every drop of water used . . . rugged quality that means maximum service life, minimum maintenance, lowest year-in and year-out water-metering costs ● You get successful Badger background of nearly half a century . . . meter installation and servicing counsel . . . meter-reading features that save time and money . . . efficient Badger Meter Testing Machines, and many Badger-engineered exclusive advantages ● For complete meter service, you'll find it pays to contact Badger.

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First for Accuracy • Low-Cost Maintenance • Durability • Sensitivity

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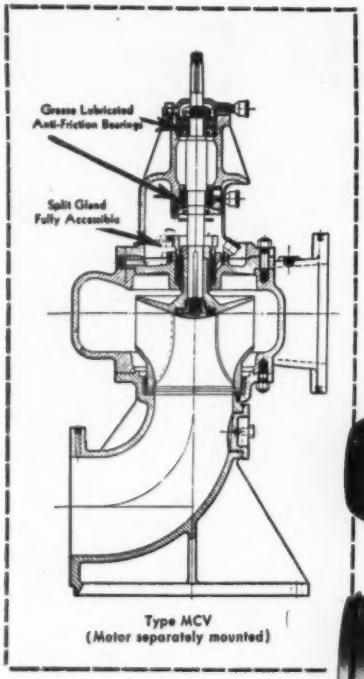
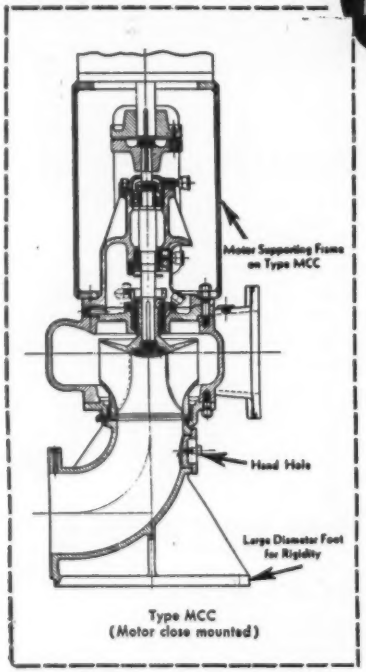


Type MCV
(Motor separately mounted)

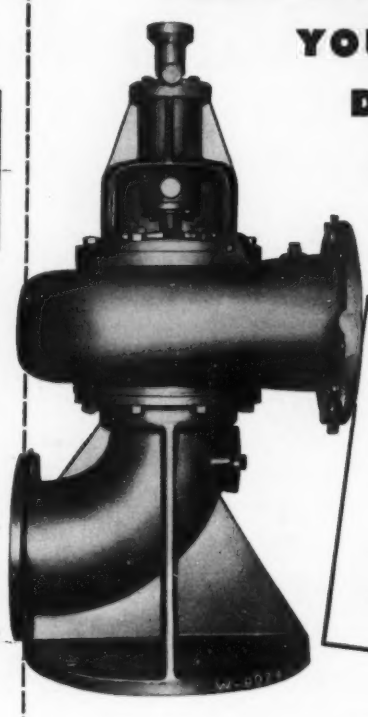
Mixflo, Type MCV
with base elbow suction nozzle



Type MCC
(Motor close mounted)

There's a Mixflo Pump

THAT WILL MEET YOUR SEWAGE DISPOSAL NEEDS— *Exactly!*



Worthington Offers The Largest Selection Of Sizes And Types In A Single Line

Non-clogging two-vane closed impellers, grease-lubricated anti-friction bearings, easy accessibility to the split stuffing-box gland and impeller eye . . . are typical of the many Worthington Mixflo features assuring low-cost, trouble-free sewage pumping.

No Need To Guess!

And along with performance-proved excellence in every mechanical and hydraulic detail, the Mixflo line offers you the widest choice of sizes and types in the field. So there's no need to compromise on a pump that's "about" right — you're sure to find a Mixflo that's *exactly right* for your particular requirements.

Bulletin W-317-B16 describes the various Mixflo types made in 10", 12" and 16" sizes. Worthington also builds Mixflos in sizes up to 84", with open or closed impellers and for horizontal or vertical drives. For more Mixflo facts that prove *there's more worth in Worthington*, contact our nearest District Office. Or write to *Worthington Pump and Machinery Corporation, Harrison, N. J.*

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WORTHINGTON

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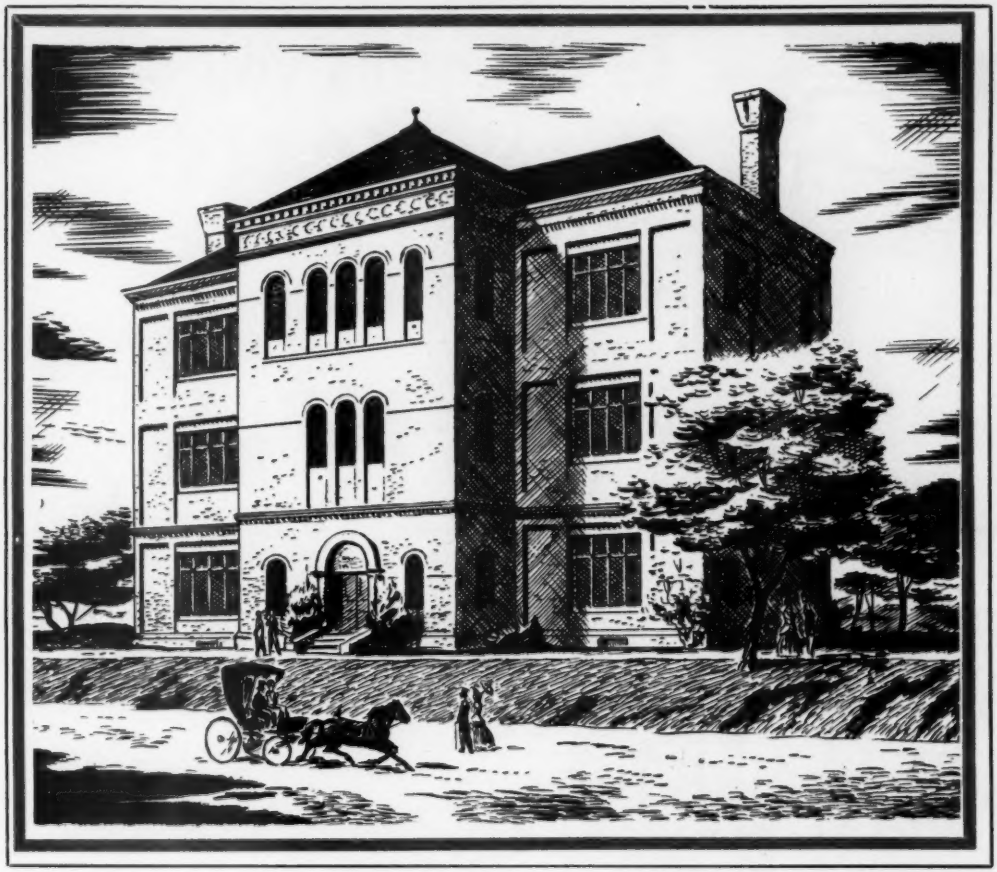


Troy's Rensselaer Polytechnic Institute as it looked 100 years ago

Troy, New York, has a cast iron water main in service that was installed more than a century ago, not long after the founding of Rensselaer Polytechnic Institute, one of America's oldest schools of science. An engineer of that day, who could foresee the transition from horse-drawn vehicles to buses and ten-ton trucks, would have been bold indeed to predict a useful life of 100 years for a cast iron underground main. Yet that is the record of cast iron pipe in numerous cities in spite of the changes in a century, and the stresses imposed by modern conditions of traffic and congested underground services.

United States Pipe and Foundry Co.,
General Offices, Burlington, N. J.
Plants and Sales Offices Throughout the U. S. A.

U.S.
cast iron
PIPE
FOR WATER, GAS, SEWERAGE

NUMBER THREE OF A SERIES

Le Roi gives you more for your MONEY!

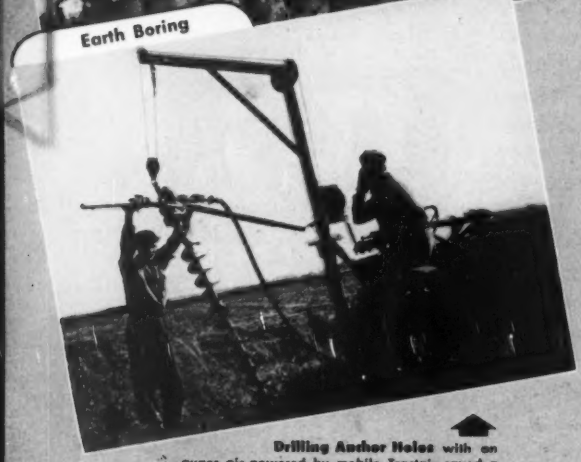
more utility
more profits

TRACTAIRS

THE BUY-

Tractair Gets Around thanks to good weight distribution, excellent traction, and a powerful 35 hp. engine. You have economical air-power when you need it despite rough ground, mud, and steep inclines.

Secondary Drilling on a mountain highway relocation and grading job is made easy with Le Roi-CLEVELAND sinkers and self-propelled air-power from Tractair.



Drilling Anchor Holes with an auger air-powered by mobile Tractair saved a utility company $18,000.

Patching Pavement is done easily and quickly with a Le Roi-CLEVELAND Patcher designed to mount on the rear platform of a Tractair. This unit made exclusively by Le Roi-CLEVELAND, drills closely spaced holes within a 7-foot radius, then breaches the section of pavement loose for easy removal. On this job, the bricks were removed just to get to the pavement underneath. Tractair's 105 cfm provides ample air-power to run this money-saving tool.

—for Money-saving Usefulness

You get air power and tractor power in a single self-contained unit

Just think what you can do with air power to keep your costs down — break pavement, dig clay, drill rock, tamp fill, vibrate concrete, and many other jobs.

And Tractair gives you *self-propelled* air power for still greater utility — anywhere, anytime. There's no need to tie up trucks or men for transportation. Tractair does it all. Lets you put the money-saving usefulness of air to work where you need it.

Moreover, Tractair can be equipped with a sturdy front-end loader having eight quickly interchangeable accessories. When so-equipped Tractair handles loading, lifting, back-filling, and snow-plowing in addition to its other duties.

That's why Tractair's the buy for money-saving usefulness. And you cut costs further still when you team Tractair with Le Roi-CLEVELAND air tools. Job data-sheets and bulletins showing how Tractair saved money for others are available upon request. Write today.

LE ROI COMPANY

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Above or below ground —
CAST IRON SOIL PIPE

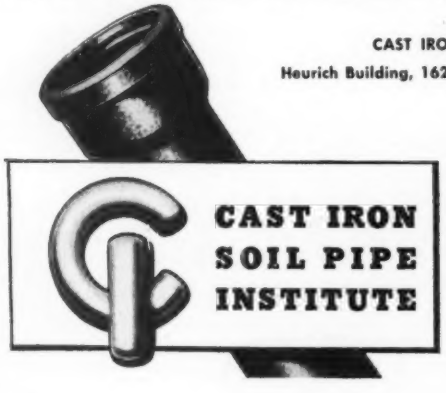
The silent member of your board of health

Your plumbing code is the silent voter in any meeting of your Board of Health. Its two-fold function is to protect your community's health . . . and its pocketbook. Significantly, like all plumbing codes, it recognizes the importance of **cast iron soil pipe.** *Can you pick up a plumbing code anywhere in the country, that isn't built around* ***cast iron soil pipe*** *and fittings?*

For Public Health authorities and municipal engineers have long known that **cast iron soil pipe** outlasts any building, offers added insurance against dangers like ground water pollution and escaping sewer gas. Moreover, it's satisfying to know that taxpayers won't have to worry about later street openings, trench excavations, backfill and repaving for jobs that should have been done right in the *first* place.

• • • • •

You know your plumbing code is protecting your community when it gives preference to **cast iron soil pipe** and fittings . . . the plumbing material that has withstood the test of time.



CAST IRON SOIL PIPE INSTITUTE
Heurich Building, 1627 K. St. N.W., Washington 6, D. C.

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OLIVER DIESEL POWER

What better proof could you ask of the *economy* you get with the new Oliver "88" Diesel Wheel Tractor? On this job an "88" Diesel is handling *two* rubber-tired compaction rollers vs. a gasoline powered tractor of equivalent size pulling *one* roller. The owner reports a fuel cost saving of 50% even though the Diesel model was pulling a load of 39,000 lbs. vs. the Gasoline model pulling a load of 25,000 lbs.

The new Oliver "88" is a natural for industrial wheel tractor operations. It's remarkably easy to start . . . requires no starting preparations. Overall efficiency is high due to superior air and fuel mixture. Efficient burning of fuel and air assures exceptional fuel savings. Prolonged piston head pressure increases lugging ability under heavy loads.

You'll find it will pay dividends in increased load handling ability . . . lower operating costs to investigate the new Oliver "88" Diesel Industrial Wheel Tractor. Your Oliver Industrial Distributor will give you the complete story.

THE OLIVER CORPORATION

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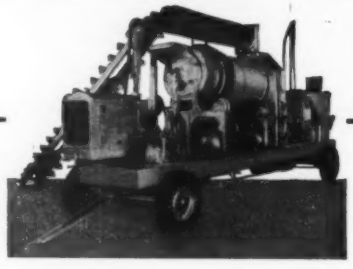

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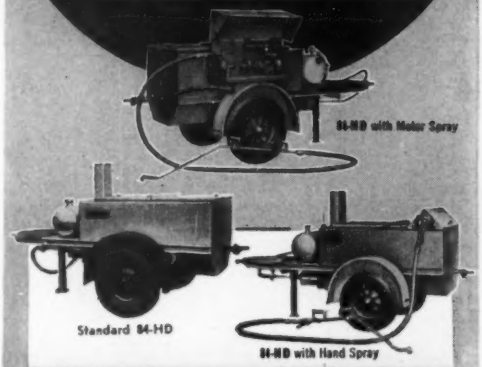

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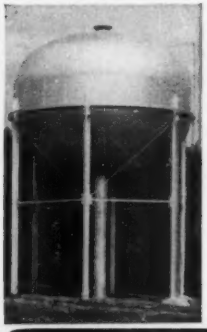

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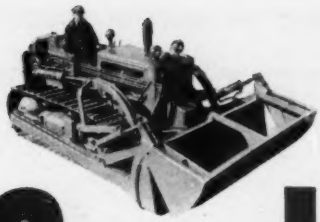
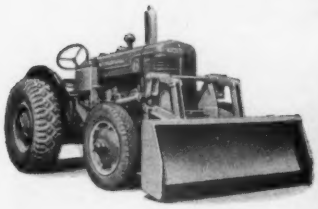
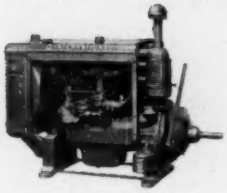
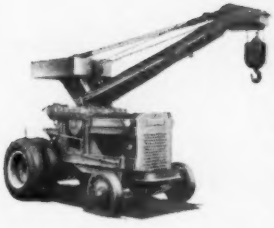




Good Housekeeping



for Yourtown, U.S.A.



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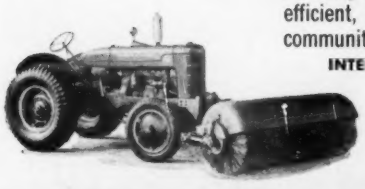

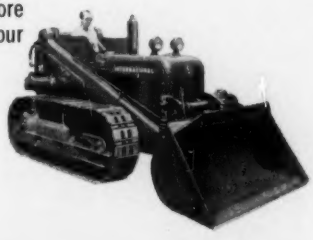

INTERNATIONAL POWER THAT PAYS

HERE'S WHAT USERS SAY ABOUT THE DEMPSTER-DIGGSTER—

"IT'S THE FASTEST, MOST EFFICIENT EXCAVATING TOOL I HAVE USED"

—A. J. METLER, *Contractor*

"During the past several years," Mr. Metler says, "I have owned and operated four conventional full revolving crawler and truck mounted shovels and cranes and know that they have a direct application to many types of excavating work.

"On the other hand, I have learned that the fast operation of the tricycle mounted Dempster-Diggster permits it to be used on certain types of work to a considerable advantage. Its mobility permits quicker transfer from one job to another.

"I have had excellent results from the Dempster-Diggster and consider it the fastest and most efficient excavating tool I have used."

Mr. Metler is one of the many contractors who has found the Dempster-Diggster to be "the fastest and most efficient excavating tool" available.

This speed and efficiency in excavation work is accounted for, mainly, by the Diggster's exclusive independent hydraulic crowd and hoist action, its hydraulic steering and wheel-type traction.

The power crowd permits bucket to keep digging until loaded . . . no digging with wheels. The hydraulic steering gives the driver sensitive, easy, finger-tip control. When accelerated, a one-handed twist of the steering wheel puts the machine in any desired position. By operating on rubber-tired wheels, the Diggster, of course, can move at the fastest possible speed on the job and to and from jobs.

The Type HL Dempster-Diggster is equipped for extraordinary high dumping. The bottom of bucket is 13 feet six inches above ground.

HERE IS THE NEW TYPE HL DEMPSTER-DIGGSTER shown excavating with a 1¼ cu. yd. (heaped) digging bucket. The Type HL Dempster-Diggster will dig through an 18 foot bank while the Type GRD digs through a 15 foot bank.

The Dempster-Diggster is a "must" for contractors, large or small operators alike.

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For fast, efficient operation in difficult terrain, the Diggster is available with crawler-type traction.

"I have not personally used the Dempster-Diggster mounted on crawler treads," Mr. Metler said, "but have seen it in operation on jobs adjacent to mine. I know it is a very effective tool and has many applications."

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This is the type GRD Dempster-Diggster, which Contractor A. J. Metler considers "the fastest and most efficient excavating tool I have used." It is shown digging 15 inches below grade.

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The water works man who installs Lock Joint Concrete Pressure Pipe will have trouble-free pipe lines. The careful design of Lock Joint Pressure Pipe does not permit blow-out or rupture; its dense concrete walls are immune to tuberculation, corrosion or electrolytic attack; and its useful life has been estimated by competent hydraulic engineers at more than 100 years. Among Lock Joint's strongest supporters are the water works officials who have installed this type of pipe and who point to it as the most economical in their systems.

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There's no worry about freeze-ups of American Meters causing high repair bills. The simple patented frost bottoms break at the correct pressure to protect all other parts, because they are not affected by the tightening of the flange bolts.

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Fluoridation News

1945 1950

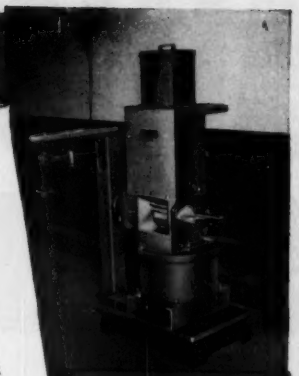
Fluoridation has come a long way since that day in 1945 when W&T Engineers, in conjunction with health authorities, made the now so well known fluoridation installation at Newburgh, N. Y. At that time, fluoridation was in the experimental stage—was looked upon as a possible, though still to be proven, method of reducing the incidence of dental caries.

Now, however, fluoridation, through intensive research and development and through practical application in many W&T installations, has merited the endorsement of such organizations as the *American Water Works Association*, the *American Public Health Association*, the *American Dental Association*, the *Conference of State and Territorial Dental Health Directors*, and the *Conference of State and Territorial Health Officers*.

Accordingly, it is the announced policy of these and other similar organizations interested in the problem to approve the application of fluoride where such application is properly engineered, is under the guidance of qualified personnel and is recommended by the appropriate local professional groups.

Therefore, when *your* community is ready to look into fluoridation—and after you have consulted your State Department of Health—you'll find W&T Engineers ready and willing to help you. They can bring the following guidance to your problem.

1. Recognition of the fact that no two fluoridation problems are alike.
2. Facts and figures to help you decide which of the several ways of adding fluoride is most suitable for your needs.
3. The experience of over five years in the practical application of fluorides.
4. Data on what fluoridation can and cannot accomplish.
5. A full line of dry chemical and solution feeders tested and proved through years of operation and *known* to be suitable for fluoridation.
6. Over thirty-seven years' experience in the field of water treatment.



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IF IT DOES — METERS WILL LOSE REVENUE

Yes, you should test 5/8" meters at 1/4 gpm —because surveys show that 13% of all water passing these meters is used at that rate. A flow of 1/4 gpm, unaccounted for, unpaid for, wastes over 10,000 gallons per month per meter! Check the low flow rate on your test bench by simply running the test water into a quart milk bottle. If the bottle fills in less than a minute, the rate is too high.

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224

The Elements Of Refuse Collection And Disposal

By WILLIAM S. FOSTER
Engineering Editor
The American City

Part I

What refuse is and how often it should be collected

The character of city refuse has gone through a great change in recent years. Note the vast amount of paper burnables brought into the Norfolk, Va., incinerator.

The American City **presents the first of five installments analyzing the subject of refuse collection and disposal as practised in this country. Succeeding installments will cover collection practices, incineration, landfills, disposal by grinding, and special disposal problems.**

FEW tasks reach more intimately into the domestic and commercial life of a city than does the service of refuse collection and disposal. Without doubt almost all political leaders guiding the destinies of our nation today who have advanced through the training school of local government, have at some time or another wrestled with this challenging task. Most of them probably could tell of promising political futures blighted and others lifted on the road to greater responsibility because of their contacts with the garbage can.

But, despite its vital role, the field remains, curiously enough, the municipal engineering service with probably the least amount of attention directed to it. In many cases even state health authorities, whom we would normally look to for leadership, take a casual view of the service. And the public generally has seen fit to consider the garbage man as an object of some derision. They blindly ignore the fact that without his regular service the community would soon become a shambles. As regularly as the sun rises and sets, every city has its allotted amount of trash and rubbish to get rid of. Any community that has endured a breakdown of this service knows the discomfort and hardship that it presents.

If it is such an important part of our daily life, it should be amenable to engineering analysis. Lord Kelvin made the classic remark that a science is a science only if the elements of it can be measured. Let us try to find a yardstick to measure the science of refuse collection and disposal.

First, what is it that must be collected? What, actually, is refuse? In general, it may be considered material no longer useful in the domestic and industrial life of a community. The city, as part of its duty to protect health and welfare, must dispose of this material in a manner that is not a menace to public health nor an esthetic nuisance.

But general definitions don't help much when one is preparing an ordinance or a contract. When we tie it down in more detail, we soon discover that we have two broad categories. These may be listed as:

Garbage—which, since it putrefies and decays, can cause a health hazard as well as a general nuisance; and

Other Rubbish—which will include paper, glass, tin cans, and similar nonputrefiable material which cause nuis-

ance, but do not necessarily create health hazards. However, they do create fire hazards and smoke nuisances when burned in the open.

We see this general pattern in the ordinances of various cities.[1]* For example, Boston classes garbage as all kitchen and other decomposable waste. All other is classed as mixed refuse.

Chicago classes garbage as organic matter or waste household food, offal, swill, or carrion. Refuse is all other material to be collected.

Dallas, in contrast, makes a wholesale classification of garbage as rubbish, trash, kitchen and household waste, ashes, paper, and food containers. In addition, Dallas makes one more classification — brush: tree trimmings, weeds, hedge and shrubbery trimmings, and tree limbs not over 3 inches in diameter. Houston also makes an all-inclusive classification of mixed refuse and calls it garbage. Newark, N. J., following somewhat the same pattern, makes a single classification, and calls everything disposable refuse.

Milwaukee, in contrast, maintains two collection departments, and has two sharply separated collection classifications. One department collects garbage, defined as animal, fruit, and vegetable waste from domestic household kitchens. The other collects refuse, which includes all other discarded material.

Norfolk, Va., makes a practical classification of its refuse into combustible and non-combustible categories. The former go to the incinerator and the latter are hauled directly to the dump.

For many years, engineers and other authorities held to the rule-of-thumb that a municipal refuse, excluding ashes, was 65% garbage and 35% other trash. Where this rule came from no one is exactly certain, but it persists even today in some specifications. Like some other rules, it is often unreliable. Today's housewife prepares most of her food without the waste that existed 30 to 40 years ago. Consequently, less putrefiable garbage needs to be thrown away. Coupling this with the fact that the foods are generally delivered in cans, paper cartons, boxes, and other containers, we have a distinct trend toward a greater volume of non-putrefiable rubbish in the refuse.

Economists haven't done so, but they might be able to judge business conditions by looking into the garbage can. Superintendent of Sanitation William Xanten of Washington, D. C.,[2] looked over his figures a few years ago and came up with this interesting record of the way inflation was affecting the housewife:

Year	*Annual Garbage Contribution*
1943	141 pounds per capita
1946	134 pounds per capita
1947	129 pounds per capita

In 1947 his crews noted that household garbage consisted chiefly of citrus rinds, carrot and beet tops, and coffee grounds.

How Much Refuse per Person?

One authoritative study that discloses what refuse actually is comes from the United States Public Health Service.[3] It discloses these quantities as tabled below.

To generalize on refuse quantities and apply these figures for a specific community is just as unreliable as to use an average figure for water use or electricity consumption when making an estimate for a particular community. However, these figures are helpful.

We find, for example, that Greeley and Hansen, Chicago consulting engineers, use a figure of 560 pounds of refuse per year per capita as a maximum when estimating quantities for Winnipeg, Canada.[4] We find that Louisville, Ky., makes an estimate of 2.23 pounds of refuse per day per person.[5] We find New York City has designed its incinerators to receive 2.7 pounds of refuse per day per person; they estimate that it will weigh 400 pounds per cubic yard and have a calorific value of 4,000 Btu per pound.[6] All except New York City exclude ashes from the refuse. And in New York City, the ash problem is not serious.

The Household Container

With so much for a general picture, the next step is to decide what to do with the refuse. The steps are not complex. One needs only to collect it and dispose of it by any of several well-tested methods.

The first step, of course, is to get the housewife to put her refuse into a sturdy container so that it can be easily picked up at regular intervals. The container should be of standard type. The conventional galvanized-iron

Pounds per Capita per Day, U. S. Public Health Service Study

	Summer		*Winter*		*Pounds per cubic yard*	
	min.	*max.*	*min.*	*max.*	*min.*	*max.*
Garbage	0.30	2.3	0.2	1.2	800	1,500
Rubbish	0.60	1.8	0.4	1.1	100	700
Ashes	0.12	0.2	1.9	3.2	1,150	1,400
Combined	1.20	3.4	2.1	5.5	500	1,000

* This and following references are listed at the end of the article.

The influence of using improved equipment has been great in the betterment of this sanitation service. Here is a Heil Colecto-Pak truck in service at Waterloo, Iowa.

A mark of good refuse sanitation is the mark of a well-run city. Mayor D'Alesandro, right, is inspecting Baltimore's fleet of closed Gar Wood packer-type trucks.

can with a tight-fitting cover is adequate and could be required without making an unreasonable demand upon the individual. Yet it is surprising how many municipalities do not make even this elementary step mandatory. In Maryland, for example, a study by the State Department of Health showed that only 41 of the communities, or 46.5%, have specifications for garbage cans.[7]

It is of prime importance that the cans be water tight and have tight-fitting covers. If municipalities enforce these simple requirements, they will avoid to a great extent the nuisance of the garbage attracting flies, or stray dogs that will spill cans for scraps.

The general policy in this country is to require the householder to supply the cans. In only a few cities does the city supply them, as is the practice in many European cities. Lansing, Mich., is one. This city adopts the unusual practice of collecting can and all, taking it to the disposal point, and leaving a clean can at the householder's doorstep.[8] Lansing, however, collects garbage only.

Separations

As indicated previously, the work is always much simpler if the householder can be persuaded to separate the garbage, rubbish, and ashes. This allows certain economies in collection since the ashes and rubbish need not be collected as frequently as the decomposable garbage. In Washington, D. C., the householder makes those three separations.[9] For a glance at disposal practices across the Atlantic, we can turn to East Ham, England. This city supplies its householders with the garbage containers, or "dust bins," as they prefer to call them. The city has found that if the housewife is given a separate container, she will more readily separate the garbage from the rest of the refuse.[10]

This presents the next question: how often should collections be made? For garbage, a schedule of two or three collections weekly in summer and once or twice a week in winter will satisfy most health requirements for single-family residences or even multiple dwellings for as many as three or four families. Non-putrefiable refuse can be collected on some less-frequent schedule, such as once a week if this meets the needs of the householders.

Of course, in areas where large volumes of putrefiable garbage must be collected, a more frequent schedule is necessary. In business districts, market areas, and large apartment developments, daily removal of garbage keeps down objectionable odors, discourages the breeding of flies, roaches, rats, and eliminates other health-hazards.

Garden City, N. Y.[11] (estimated 1950 population 15,000), maintains a high standard by collecting garbage three times a week from the rear yard and collecting ashes twice weekly in winter and once weekly in summer from the basement. Other rubbish is collected once weekly from the property line. In the study of Maryland refuse-disposal habits,[7] the State Board of Health recorded that out of 30 communities, 17 collect garbage twice a week, two collect three times a week, two collect four times a week, one makes collections six times a week, and one goes all out to collect every day of the week. Most collect ashes two or three times weekly in winter. Rubbish is collected twice a week by 10 towns; three times a week by three; four times a week by two; seven times by one; six make once-a-week collections; six, twice a month, and two, once a month.

In Kansas, the cities of Winfield and Independence (estimated 1950 populations 9,000 and 11,500 respectively) collect garbage twice weekly and other trash once weekly. The smaller communities of Garden City and Liberal in the same state collect both garbage and trash once weekly.[12]

Summary

Out of these observations begins to emerge a pattern which shows what municipal refuse is, how often it should be collected, and why. That portion with decayable garbage in it should be collected at least once and preferably twice a week in winter, and at least twice and preferably three times a week in the summer. Refuse, which consists of the unwanted solid wastes of a community, may be grouped into decayable garbage and other trash for ease in collecting; it may be grouped into combustibles or incombustibles for ease in incinerating; or it may be combined as mixed refuse if the sanitary-landfill method is used. We will discuss these methods in future issues.

Next month's installment: "What Constitutes a Good Refuse-Collection Organization."

Bibliography

(Articles That Have Appeared in *The American City*)

1. What Constitutes Municipal Refuse?, June 1947, pp. 102-3.
2. High Prices Cut Garbage Volume, Dec. 1947, p. 13.
3. Garbage and Refuse Collection Data, from U. S. Public Health Service Bulletin, *Wartime Refuse Disposal Practice*, July 1943, p. 13.
4. Winnipeg, Canada, Builds a New Incinerator, by William D. Hurst, City Engineer, and correspondence with Greeley and Hansen, Oct. 1947, pp. 119-21.
5. Questions and Answers from Louisville, July 1947, p. 13.
6. New Incinerator Design Standards Set in World's Largest Incinerator, April 1950, p. 108.
7. How Maryland Handles Municipal Refuse, by Edgar G. Heyl, Maryland Department of Health, Nov. 1949, p. 95.
8. Garbage Collection System Has High Standards, Oct. 1946, pp. 103-4.
9. Controlled Open Incineration, April 1944, pp. 42-3.
10. East Ham Uses Incentive System, Aug. 1946, p. 102.
11. Garden City Practice, Nov. 1949, p. 18.
12. Kansas Collection Charges, March 1949, p. 13.

"Know Your Neighbor," Theme of University City's Annual Conference

UNDER the Leadership of the City Plan Commission of University City, Mo., an annual dinner meeting is held to which city officials and members of other local public bodies are invited. The purpose of these meetings is (1) to get acquainted with each other, and (2) to discuss problems of timely importance to the orderly growth of University City.

At the latest conference in this series, held on January 9, 1951, a toast entitled "Your City" was given by A. P. Greensfelder, consulting engineer, of St. Louis. In it the speaker emphasized the importance of more adequate citizen recognition of the services rendered by the paid and unpaid servants of the public.

> How many of us [Mr. Greensfelder asked] ever visited our forester or sanitary men? What small minority enters our fine schools to chat with teachers unless our modern spoiled children fall in the gym or fail their classes? How few of us know who are the members of our park and library boards or of our governing City Council except to protest if our personal toes are being stepped on, rightly or wrongly? What percentage of our families go to the polls to exercise the right to vote—a privilege so rare in this world that we send our sons to battle on foreign lands so that democratic rule may there prevail?
>
> Yet, lo and behold! Here at this Annual Community Conference are gathered together, as the guests of our City Plan Commission, half a hundred fellow citizens who, courageously answering the thankless calls to civic duty, are serving mostly without compensation to make our community an ever better place in which to live, love, and labor. To our new City Manager, I say it is a good plan to continue this *Know Your Neighbor* get-together. It develops friendship, cooperation, and mutual understanding.

Elder Gunter is City Manager of University City, and Professor Joseph D. Murphy, of the School of Architecture, Washington University, is Chairman of the City Plan Commission.

How Shall Injured Volunteer Civil-Defense Workers Be Compensated?

By CHARLES S. RHYNE
General Counsel
National Institute of Municipal Law Officers

MANY municipal attorneys are currently concerned with the problem of compensation to volunteer civil-defense workers who may be injured as a result of their civil-defense activities, either while in training or in the actual discharge of their responsibilities. Many legal problems are created by the relationship of volunteer personnel to a municipality.

Without doubt, the efficiency of civil-defense organizations throughout the country could be greatly enhanced if those workers who constituted the majority of such organizations knew that they would be protected in the event of injury. Public assumption of the risks of these workers would appear to be the most satisfactory solution. Analysis of the problem at greater length will reveal that this is, in fact, the only practical solution.

Few cities can bear the financial burden which an adequate compensation plan for volunteer civil-defense workers would create—and this is particularly so in critical target areas. There would appear to be little logic in requiring the City of Seattle, for example, to bear the entire cost of compensation to volunteer civil-defense workers and permit the City of Tulsa to escape this liability simply because of its more sheltered geographical position.

Problems No Longer Academic

A variety of legal problems arise:

Are volunteer civil-defense workers "employees" of the city?

Are they within workmen's compensation acts by specific inclusion or by interpretation?

Would the governmental-function theory permit municipalities to escape liability to volunteer workers?

Is the employment of a volunteer civil-defense worker "casual" so as to create a different type of legal relationship for workmen's compensation purposes?

These and the other problems suggested were encountered during World War II. Some cities then required these volunteer workers to execute waivers to any claims for injury which they might in the future have against the city or asserted municipal immunity in their civil-defense ordinances. Others took the position that these volunteers should be protected by the city. The problem never became acute as few volunteers were injured under the circumstances then prevailing. Now however, we are in a different position, for our cities could well be subjected to enemy attack. The problems no longer remain academic.

A Federal Insurance Plan Needed

Methods used by cities during World War II to cope with these problems reflect the inadequacy of the consideration given to protection for volunteer civil-defense workers. And the mutual aid and mobile-support necessities of atomic warfare under which these workers may be called into other jurisdictions makes this injury problem all the more difficult of solution from a legal viewpoint. Except on the basis of a national insurance plan covering all volunteer workers equally, unequal or meager protection or no protection at all will result.

The answer seems to lie in a federal plan for recompensing injured civil-defense volunteers out of a national insurance fund along the lines of the War Damage Corporation idea of World War II for property damage. Federal recognition of the financial limitations of states and municipalities is implicit in the Civil Defense Act of 1950, but no plan has yet been evolved for assisting states and cities in financing the multitudinous claims which would arise as a result of the many injuries which would be suffered by volunteer civil-defense workers in a community that underwent a serious enemy attack. Because the problem of civil defense is so national in character despite the local responsibility for its operation, it seems only just that the Federal Government bear the major cost of workmen's compensation for injured civil-defense volunteers.

This is not the first suggestion of federal responsibility for injuries to volunteer civil-defense workers. In 1942, Representative Martin J. Kennedy of New York introduced a bill, H.R. 6316, 77th Congress, which recognized this theory. Section one of that bill provided that the United States would pay compensation ". . . for the disability or death of any air-raid warden or other volunteer worker engaged in the work of civilian defense resulting from a personal injury sustained in the performance of his duty during the present state of war. . . ." No action was taken by the Congress on this bill, but the problem was not then as great in its potential as it is today.

Representative Kennedy's bill was followed by Senator Pepper's two bills, S. 2620, introduced in the 77th Congress, and S. 450 in the 78th Congress, which would have provided for medical care and disability benefits to civilian-defense workers injured while in the performance of their duties. Likewise, the Second War Powers Act of 1942 contained a proposal, subsequently eliminated in the House of Representatives, that would afford protection to the volunteer civil-defense worker from injuries received in the course of civil-defense activities.

England's Experience During World War II

During the last war, England handled the problem on a national basis. The Personal Injuries Act of 1939 contemplated compensation for "war-service injuries" which type of injuries applied solely to "civil-defense volunteers." The injuries covered by this act were those "arising out of and in the course of performance by the volunteer of his duties as a member of the Civil Defense organization to which he belongs at the time the injury was sustained and not to have arisen out of and in the course

of his employment in any other capacity." Moreover if for any reason the volunteer could not qualify under this section resort to the workmen's compensation system was expressly reserved as a remedy.

Congressional Action Urged For National Insurance

The National Institute of Municipal Law Officers at its 1950 Annual Conference considered this matter and urged that the Congress adopt a national insurance scheme whereby compensation would be paid out of a national insurance fund by the Federal Government for injuries incurred by volunteer civil-defense workers.

Administratively speaking, the Federal Government is certainly in a better position to cope with the problem of handling this matter. For example, if a war-damage-insurance corporation were established to handle property-damage claims arising from enemy action, such a corporation might conceivably and readily administer the compensation plan for civil-defense workers. H.R. 1031, 82nd Congress, 1st session, introduced by Representative McKinnon of California on January 8, 1951, contains provisions along this line which, with some perfection in coverage and administration, could accomplish the purposes here advocated. In this day of unparalleled activity on the federal level, it can hardly be argued that administration of the scheme would be impossible.

Furthermore, the national insurance fund could be a partially self-liquidating project through the simple expedient of assessing a nominal charge—perhaps of $1—to be paid by each volunteer desiring federal coverage. With millions engaging in volunteer civil-defense activities, a sizable fund could be created by a nominal charge for coverage. Such a charge would also formalize the relationship of the volunteer to the fund and aid in preventing false claims.

The problem of injuries to volunteer workers was specifically reserved for future consideration by the Congressional committees when they approved the Federal Civil Defense Act. Now is the time to contribute your ideas as to the best solution to this most pressing problem. It is hoped that Congress will not fail to provide one of the effective means for insuring a successful civil-defense program. *To fail in this one respect might jeopardize and impair the attainment of the necessary degree of perfection in civil-defense operations.*

Civil-Defense Spotlight Now on Municipalities

By JOHN A. DE CHANT
Public Affairs Office
Federal Civil Defense Administration, Washington, D. C.

THE spotlight of civil defense is beginning to pick out the cities of America. This will become increasingly noticeable as the nation leaves the planning stage at federal and state levels, and moves into actual civil-defense preparation at the local level. Operational activities will center, as they should, on the individual and his community.

The most important—and most numerous—functions of civil defense are community functions. This is not surprising, since bombs do not fall on federal or state governments as such. Bombs fall on people and cities. Therefore, civil defense is a local matter of the utmost importance to all municipal authorities.

Late in January, Federal Civil Defense Administrator Millard Caldwell issued a call to the governors of the 48 states, as well as of the four territories, and to the District of Columbia commissioners, to take action by March 1 which would place civil defense throughout the country on a firm footing. In his message, Mr. Caldwell urged that the following steps be taken:

1. The passage of adequate state civil-defense legislation.
2. The appointment of a thoroughly competent, full-time, civilian director of civil defense, with a capable staff.
3. Appropriation of needed funds for the support of civil-defense activities.
4. Establishment of an operating civil-defense agency in every community in each state and territory, and in the District of Columbia.

Mr. Caldwell also asked that by April 1 each state and city have in full operation a program of recruitment for civil-defense volunteers in all categories, and that fire and police auxiliaries be fully integrated.

"A sound national civil-defense program in being is as necessary to our national security as planes, tanks, and armies," Mr. Caldwell said. "The military services have the responsibility for warding off attacks on our homeland and striking back at the enemy. Civil defense must save lives, reduce the impact of an enemy attack, and keep essential production going in order to supply the armed services. It is essential that civil defense be given a top priority in the legislative programs of the states and territories."

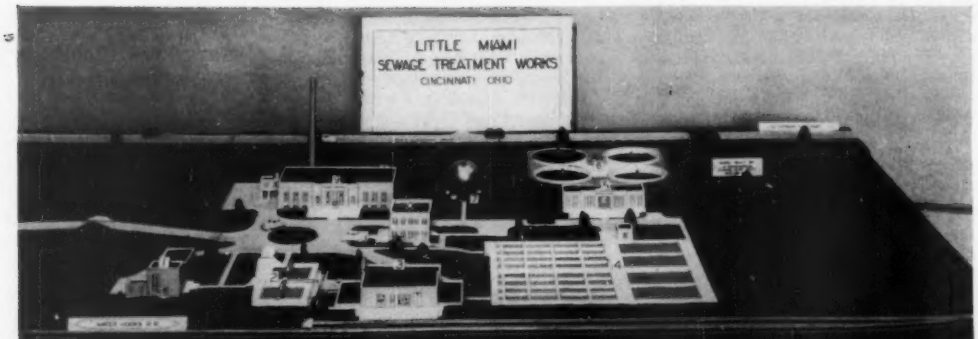
The Federal Government is charged under the Civil Defense Act of 1950 with developing and furnishing to states and local governments the information, advice, and guidance which they need in order to plan for their own communities. This already has been accomplished through publication of a book entitled, "United States Civil Defense," issued last September, and by means of detailed manuals and pamphlets already or soon to be published.

The detailed plan for civil defense must be accomplished by local governments, and must be based on self-help. Effective community action in time of disaster requires community responsibility for self-preservation and the will to fight back. The main effort, therefore, must come from the individual citizen and the community group, with needed help coming from county, state, and federal agencies as circumstances require.

"*New Towns for American Defense*"

THE *Journal* of the American Institute of Architects (The Octagon, Washington, D. C.) has published, as its issue for January 1951, a special 50-cent number on "New Towns for American Defense." There are introductions by the National Defense Committee of AIA, and by William L. C. Wheaton, and articles on:

"A New-Town Program," by Albert Mayer.
"New Towns for America's Peacetime Needs," by G. Holmes Perkins.
"Oak Ridge: A World War II New Town," by David S. Geer.
"The Design of New Towns," by G. Holmes Perkins and Roger L. Creighton.
"The Economic Feasibility of New Towns," by William L. C. Wheaton and Robert L. Wegner.
"British New-Town Planning," by William G. Holford.



Cincinnati Builds To Meet A Pollution Abatement Standard

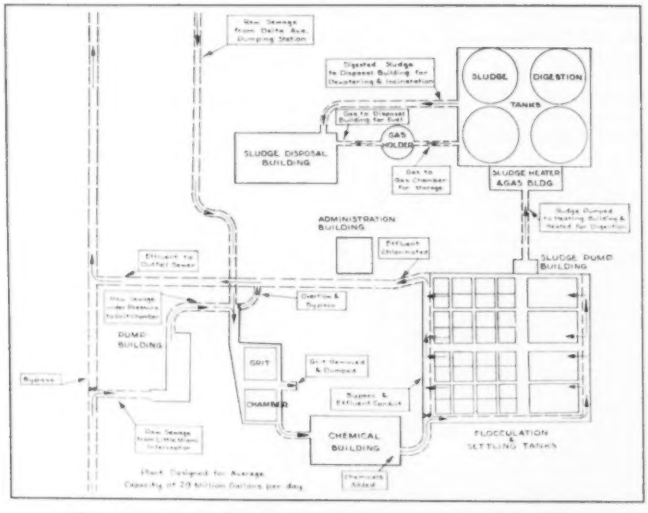
New sewage-treatment plant complies with Ohio Compact purification requirements

This is the model study of the proposed Little Miami Sewage Treatment Plant, showing: 1. pump building; 2. grit chambers; 3. chemical building; 4. flocculation and settling tanks; 5. sludge heating and gas building; 6. sludge digestion tanks; 7. gas holder; 8. elutriation tanks in rear of 9; 9. sludge disposal building; 10. administration building.

THE problems are always just a little easier to solve in the sewage-treatment field if the designers know clearly what solution will be the most satisfactory. Cincinnati engineers appreciate this, and are, therefore, using the standards set by the Ohio River Valley Water Sanitation Commission for its new treatment-plant design.

The polluted condition of the Ohio River has been well known for many years. More than a quarter-century ago, positive action was initiated to relieve the problem and bring the river to its former purity and beauty. A step along the way was taken in 1948, when the states bordering the river formed the Ohio River Valley Water Sanitation Commission.

This Commission established standards for stream purity for sewage-treatment-plant effluents tributary to the Cincinnati Pool by requiring, under most conditions, a 65% reduction of the BOD. Having this standard, Cincinnati could proceed with assurance on its sewage-treatment-construction plans.



Flow diagram of Cincinnati's proposed sewage-treatment plant.

Treatment Proposed

The treatment proposed by Havens and Emerson, Cleveland consulting engineers who were retained by the city to prepare the necessary plans and specfications, included primary settling to be aided by chemical coagulation if needed, separate sludge digestion, vacuum filtration, and sludge incineration. The plant design was drawn so that supplemental oxidative-treatment facilities can be prepared later, if desired.

The plant will be able to treat an average of 28.8 mgd, or the volume anticipated for 1980. It is designed to receive maximum storm flows at 86.3 mgd. The designers expect that 40%

of the solids load will be received in an 8-hour period.

For grit removal, the designers planned two units. One unit will provide a detention time of 1.2 minutes and a velocity of 0.55 feet per second at the average design flow of 28.8 mgd. The designers expect us to use comminutors to shred the large solids. Three units will be used, capable of receiving and handling the 86.3-mgd maximum flow.

Application of Alum

For chemical treatment, duplicate automatic feeders will apply alum at rates up to 1,000 pounds per hour, which corresponds to a dosage of 3 grains per gallon at double the average flow, and with one machine in reserve. An aerated channel will bring the sewage and the coagulant to the settling basin. The air will be supplied by two rotary-type blowers, each supplying 600 cfm of air. This will allow either unit to apply air at the rate of 0.02 cubic feet per gallon at 150% of the average design flow.

The solids will settle out of the sewage in four flocculation-settling tanks. These will be rectangular, each 185 feet long and 41½ feet wide, with a water depth of 12 feet in the settling end, and 14¾ feet in the flocculation end. This anticipates 55-minute flocculation and 90-minute settling at the 1980 average-design flow. The effluent from the settling tanks will receive a final treatment of chlorine from three machines that can apply 10 to 20 ppm of chlorine for 150% of the average 1980 flow.

Digestion and Elutriation

The plant will use four digestion tanks with a total capacity of 357,000 cubic feet. The tanks will be 64 feet in diameter and will have floating covers. Their design will provide a 31-day storage for the solids if there is 50% removal, or 24-day storage at 70% removal. The plant also will have a 36-foot-diameter spherical gas holder with a capacity of 49,000 cubic feet at 30 pounds' pressure.

The sludge will be elutriated and then conditioned with ferric chloride. To dewater the sludge, the plant will use four vacuum filters which will carry the normal load of the year 1980, when operating three filters at the rate of 4 pounds per square foot per hour. The final disposal anticipated is by incineration.

Sewer-Service Charge

The improvement will be financed by a sewer-service charge based on the quantity of water used, unless it can be shown that the water entering the premise does not go to the public sewers. A sliding scale of rates is in effect, which starts at 6 cents per 100 cubic feet for the first 60,000 cubic feet monthly.

The project was designed by Havens and Emerson, of Cleveland, consulting engineers, under the general direction of the late H. H. Kranz, City Engineer, and in collaboration with A. B. Backherms, Principal Engineer of the Sewers and Sewage Disposal Section.

A cold January day for ground-breaking, but more than 120 spectators turned out. Left to right are: T. M. Berry, Chairman, Sewers Committee; A. D. Caster, Senior Sewage Engineer; R. G. Sarvis, Director of Public Works; Hudson Biery, Chamber of Commerce Chairman of Stream Sanitation; A. B. Backherms, Principal Sewerage Engineer; T. J. Montgomery, City Engineer; W. R. Kellogg, City Manager, and E. J. Cleary, Executive Director of the Ohio River Valley Water Sanitation Commission.

St. Louis, Mo., Counts Its Gains In Smoke Abatement Studies

THE air is cleaner in St. Louis, Mo., today, according to studies by the St. Louis Health Division. A comparison of this survey with one conducted in 1936-7 by the Air Hygiene Foundation of Pittsburgh reveals that residents of the city now enjoy an atmosphere as low in sulphur dioxide as only residents far out in St. Louis County did 14 years ago.

Other Disclosures

The survey disclosed further that concentrations of sulphur dioxide were 83% lower in winter and 73% lower in summer than they were 14 years ago. To the public this reduction has been apparent in the absence of the sulphury sensation formerly experienced on coming into the city. Painted surfaces do not require repainting as frequently as in the past. Surface deterioration of stone and similar materials is retarded. Certain types of metal-corrosion are reduced, and certain plants which formerly could not be grown within the city are now as hardy in the city as in outlying areas.

The survey indicates that space-heating contributes an average of only 0.011 ppm of sulphur dioxide to the total winter concentration. The remainder of the total found, which was 0.041 ppm, comes from automobiles, trucks, buses, apartment and hotel water-heaters, refuse-burning, and railroad locomotives.

Weather apparently plays an important role. During the 1950 study, sulphur dioxide concentrations were twice as high when the wind velocity was below 14 mph during the winter season. Highest average sulphur-dioxide concentrations were found when east winds prevailed. During the summer, average concentrations were significantly higher when the Weather Bureau did not note smoke.

During the winter, it was found that average sulphur dioxide concentrations tended to increase as visibility in miles decreased. This was not true in summer. A tendency toward lower sulphur dioxide concentrations when relative humidity was above 69% was shown in the summer study. Absolute humidity was found to bear little relationship to sulphur dioxide concentrations.

The work was conducted under the supervision of J. J. Schueneman, Air Pollution Engineer of the St. Louis Health Division, and incorporated the results of about 500 individual samples.

Every

SQUARE FOOT

Counts

. . . in the extensive water improvements at Evanston, Ill., made on a site where space was at a premium

THE problem at Evanston was how to double the filter-plant capacity, build a new pumping station, and keep the old plant in service during construction, while using a plant site that was too small by any reasonable standard. The solution was to turn our backs to many conventional designs and put every foot of the site to work.

Evanston built its 12-mgd filter plant in 1913, doubled it in 1924, and began outgrowing it in 1936. Site limitations, however, and then the war, delayed enlargements. When the long-deferred plant improvements were finally undertaken in 1948, the potential demand for water far exceeded rated plant capacity.

The water-works site was about 915 feet long and 143 feet wide over most of the length, totaling about 3.1 acres. The filter plant and combined steam and electric pumping station occupied most of this area, excepting 250 feet at the east end, of which about half extended out into Lake Michigan.

In 1941, Evanston began supplying water to the Village of Skokie, which adjoins Evanston on the west side. The 1950 census population of Evanston is 73,000, while that of Skokie is only 14,800. The area of Skokie, however, is roughly 50% greater than that of Evanston. Large population growth of Skokie in the near future seems reasonably assured.

For these reasons, and also on account of high property values, it seemed desirable to make as intensive use as feasible of the existing water-plant site, and to adopt a layout providing for as much future expansion as practicable.

Old and New Plant Layouts

The old filter-plant clear well occupied the entire west end of the original site. The small filter-plant head house was set back from the street on the west. The twelve 2-mgd filters were on both sides of a central operating aisle extending from the head house to the east end of the clear well. Next came the two settling basins with a combined length of 205 feet. These basins were 100 feet wide, thus occupying only 70% of the site width at this point. Furthermore, these basins had a bottom elevation about 9 feet above lake level, so that, vertically, much space was wasted.

Next, to the east, beyond an 18-foot driveway, was the pumping station, originally a steam plant. Low-lift pumping had been changed to electric power

By DONALD H. MAXWELL
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Chicago, Ill.

with a total capacity of 43 mgd. These pumps took suction from two circular wells within the east part of the station served by a 30-inch and a 36-inch cast-iron intake line from Lake Michigan. The high-service pumping capacity was 65 mgd, including one 10-mgd and one 15-mgd electric unit.

The new settling basins, of 48-mgd rated capacity, are located at the west end of the new north area, opposite the old basins which they replace. There is enough space to the east to provide for the doubling of the basin capacity without building beyond the present shoreline.

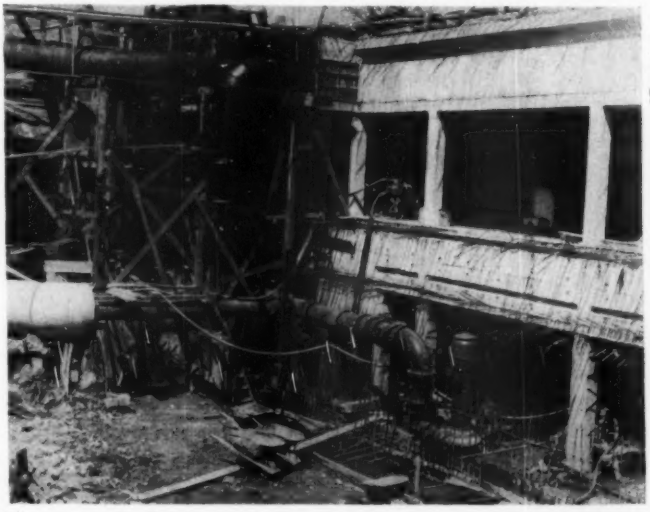
The older, or west, mixing-and-settling basin, of groined arch construction, was demolished to make way for the 24-mgd filter addition with a 1,200,000-gallon clear well beneath it, built as an extension to the old filter plant.

A chemical building is provided over the south end of the new settling basins, over the gallery space between the basins, and over the new filter addition adjoining on the south.

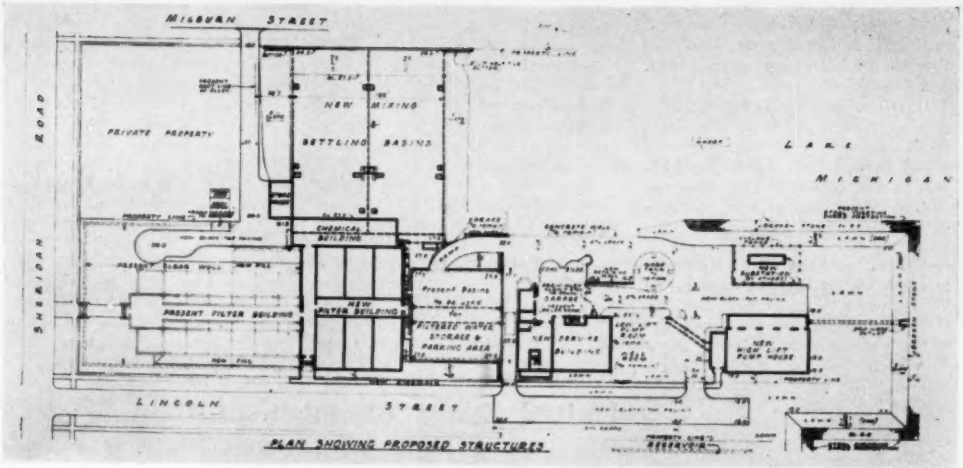
The new electric pumping station is located 25 feet east of the old station. This leaves a space about 330 feet long between the new station and the east end of the new 24-mgd filter addition, to allow for possible future filter additions, totaling 80 mgd, or a plant total of 128 mgd.

The abandoned west two-thirds of the old pumping station was rebuilt to serve as a water-department office and service building. This can be turned to filter use if needed in the future.

The mixing compartment of the old east settling basins, extending lengthwise between the two settling compartments, was converted to a passageway between the new filter-pipe gallery and the service building, and to storage bins for filter sand and gravel. The two settling compartments will be used for reserve filtered water storage of about 0.8-mg capacity. The top of the basin has been converted to convenient park-



Because of close quarters, work was scheduled with great care. This shows construction of galleries at the end of the new mixing and settling basins, illustrating the use of the temporary settled-water effluent and drain lines.



The improvements, when economically and thoughtfully fitted to the present site, gave the arrangement shown above.

ing space. The space will accommodate another 24-mgd filter addition, when needed.

The old low-lift pump-room and suction wells, located in the east end of the old pumping station, have been retained for economy. When it becomes necessary, a new low-lift pump-room can be provided at a lower level adjoining the new pump-house on the north in connection with a new intake.

Settling Basins

In line with the policy of utilizing the site to the fullest extent, the two new settling basins are of the two-story, return-flow type, which is well adapted to a limited site. This design has the further advantage of high efficiency in operation.

A cross-partition on the upper level of each basin provides a slow-mix basin at the end of each unit, with slow-mix influent and settled-water effluent ducts on opposite sides of the cross-partition wall. The disadvantage of carrying the raw water back to the cross-partition wall is compensated for by the convenient opportunity afforded for installing venturi tubes to measure the inflow to each basin. Slow-mix equipment is of the Floctrol type with longitudinal shafts and cross baffles having ports concentric with the shafts, thus minimizing short-circuiting and giving what is believed to be very efficient mixing.

The slow-mix effluent passes through floor openings at the south end of the basin into the lower, or first, settling-basin compartment with floor at elevation —3.0, where the bulk of the heavy suspended matter settles out at the south end, the sludge building up here to a maximum depth of about 5½ feet in six months. The deposit tapers off towards the north end to about a 7-inch depth. Here the water flows through ceiling ports to the upper, or second, settling compartment for final settling of the lighter particles.

Mixing time at rated capacity is 45 minutes. Settling time is limited to 2.8 hours at plant-rated capacity. The new basins have now been serving nearly two years with very satisfactory results.

The filter addition consists of six 4-mgd filters at standard rating. To avoid pipe-gallery congestion, wash water is drained from each filter through a sluice gate at the back. The clear well is divided into three compartments. Filtered water from the entire plant is brought together at the central compartment for application of fluoride and for final chlorination after which it circulates through the two larger compartments, to give a contact period. All or part of the clear well may be by-passed.

A backwash pump-suction compartment is provided for filter cleaning. It is separated from the clear well and arranged to be supplied through either. Three 10-mgd wash pumps supplement the original 100,000-gallon wash tank. The filter-surface wash is supplied directly from high service, through an orifice meter. The old 42-inch filter-effluent line has been combined with the old 30-inch drain line, to serve as a combined drain for the larger new filters.

Chemical Building

To save space, the north-half width of the chemical building is built over the south panel of the new mixing and settling basins, and the other half over the adjoining 15-foot basin pipe gallery.

The chemical-building top floor provides a space of 30 by 110 feet for storage of bag chemicals and for the filling hoppers of the chemical-feed machine. The floor below includes a chlorine tonncontainer storage and scale room, chlorine-feed room, dry-feed-machine room for fluoride, carbon, alum, and lime, operator's service room, and ample laboratory and accessory storerooms.

Service Building

The former boiler-room is converted principally to a water-department truck garage with heating boiler room at the west end served by the old brick stack. Over the heating boiler is the new indoor, secondary transformer and substation room and a storeroom.

The old, west high-service pump-room has been converted to a plant shop, and the larger or east high-service pump-room has been converted to a water-main and service-equipment storeroom.

A new second story over the former high-service pump-rooms provides a meter shop, offices, small drafting-room, file and storerooms, lunch-rooms, and lavatories.

Pumping Station

The old low-lift pump installation was retained for economy, with the addition of a gas-engine drive on one 10-mgd unit to give reserve power. The low-lift room has been connected by tunnel to the new pump-house to the east, which accommodates the main switchboard and the high-service pumps. The pumps are so arranged that about half of the total capacity is supplied from each of two separate suction compartments, either of which can be taken out of service independently. The pumps discharge to a loop header, valved so that any pump can be taken out of service without shutting down any others. These are two separate

discharge lines, each with a venturi meter having an automatic cone valve mounted in the throat, arranged to close automatically in case of a line break in the station.

There are five new pumping units ranging from 6- to 15-mgd capacity, which, together with the two units moved from the old station, total 74-mgd rated capacity. The two new 10-mgd units have dual drive, with gasoline engine standby.

Filtered water reaches the pumping station through two 48-inch concrete pipelines laid in the north parkway of the adjoining street. These lines connect to the old and new clear wells and to the 5-mg reservoir across the street from the station, and are so arranged that the plant can operate with either line out of service.

Construction was governed by the necessity of keeping the plant in continuous service. This involved much temporary work; principally, as affecting pipe connections. For example, the new mixing and settling basins had to be put in service with temporary connections before the old west basin could be abandoned to make way for the new clear well and filters.

Also, a piecemeal and difficult job of pipe-laying in the street had to be finished before the new pumping station could be put in service.

The greater depth of the new settling basin — approximately 12 feet — and clear-well footings, in comparison with the closely adjoining, old settling basins, added appreciably to the hazard of the work, considering especially the groined-arch construction of the old west settling basin. The latter did come the nearest to causing an emergency when it developed settlement cracks and substantial leakage. This happened, fortunately, only after the new basins and connections were far enough advanced to make a quick changeover feasible.

Joseph L. Rose is Commissioner of Public Works, and Edward L. Jones was resident engineer for Alvord, Burdick and Howson, the designing engineers. The construction work was performed in a creditable manner by the S. N. Nielsen Company, Inc. The piping sub-contractor, Johnson Brothers Heating Company, deserve special mention for a difficult job well handled.

Throughout the work, Horace R. Frye, Superintendent of Water Works, and the plant personnel, were most cooperative and helpful.

Contract Data for the Evanston Water-Treatment Plant

Construction:
S. N. Nielsen Co., Chicago, Ill.
Cone valves: S. Morgan Smith Co., Lincoln St., York, Pa.
Gate valves: Ludlow Valve Mfg. Co., Troy, N. Y.
Sluice gates: Chapman Valve Mfg. Co., Indian Orchard, Mass.

Slow-Mix Equipment:
Chain Belt Co., Milwaukee, Wis. (Rex Floctrol)

Filter Equipment:
E. W. Bacharach & Co., Kansas City, Mo.
Valves: Iowa Valve Co., Chicago, Ill.
Operating table and controllers: Simplex Valve and Meter Co., Philadelphia, Pa.
Venturi meters: Builders-Providence, Inc., Providence, R. I.
Dry-feed machines: Omega Machine Co., Providence, R. I.

Pumping Equipment:
Worthington Pump and Machinery Corp., Harrison, N. J.
Motors: Electric Machinery Mfg. Co., Minneapolis 13, Minn.
Gasoline engine: Climax Engineering & Pump Mfg. Co., 1812 S. 4th St., Clinton, Iowa

Switchgear:
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
4,160-volt main switchgear, new pump house. Indoor substation in service building. 460-volt motor control and distribution center located in the filter building.

United States Chamber of Commerce Urges Full Maintenance of Highways

FULL maintenance of the nation's highways during the mobilization period has been urged by the Chamber of Commerce of the United States in a statement adopted by its Board of Directors, based on recommendations of the Committee on Transportation.

The statement urged concentration on continuance of work on the 38,000-mile interstate-highway system. In all decisions pertaining to allocations of highway materials and to future programs the Chamber recommends:

1. All levels of government should continue to support a highway-improvement and -maintenance program sufficient to keep our roads in proper condition to carry their share of the load, along with railroad, water, and air transportation, during the defense-mobilization period ahead.
2. The federal-aid highway-construction program should be concentrated primarily on the 38,000-mile Interstate Highway System, maintaining the usual matching requirement for federal and state funds. The Interstate System is the backbone of the national road network, comprising only 1½% of the total mileage, yet carrying 20% of the traffic.

Today our network of streets and highways [said the Chamber] is still suffering from the setback of World War II, when the construction and improvement program was cut drastically, despite only a 22% reduction in total travel. Since then, motor vehicle volume has risen rapidly each year, now being one-third higher than the pre-war peak travel of 1941. Significant has been the unprecedented trend toward heavier vehicles. Today we have 20 times as many heavy-axle loads (20,000 pounds or over) as before the war.

Construction per ton-mile of highway-use during the war dropped to less than half the pre-war level, and has not advanced much since then. Yet, present level of construction is rated at only two-thirds of that needed over a considerable number of years to bring our roads into balance with minimum needs. And, today we depend, as never before, on our highways for movement of passengers and goods. For instance, the Army is using three times the amount of truck shipping service now than at the peak of the last war.

Inter-Professional Collaboration Urged

BETTER design in housing projects, airfields, hospitals, and other large-scale projects, where the collaboration of several professions is involved, is aimed at in an important report issued in Washington on February 2 by representatives of architectural, engineering, and planning societies.

This report on inter-professional collaboration is the work of a joint committee f the American Institute of Architects, the American Institute of Electrical Engineers, the American Institute of Planners, the American Society of Civil Engineers, the American Society of Landscape Architects, and the American Society of Mechanical Engineers. The committee was established last summer, with Roy F. Larson, Philadelphia architect, as chairman of its executive group.

The document comprises a general statement of the principles of collaboration among the design professions, and a series of outlines spelling out who does what on building projects of various types. The report now goes to the individual professional societies for further consideration and endorsement. Then it will be printed and made generally available.

Others on the report-drafting group were the late A. D. Taylor, Cleveland, American Society of Landscape Architects; S. Logan Kerr, Philadelphia, American Society of Mechanical Engineers; and Joseph H. Ehlers, Washington representative of the American Society of Civil Engineers. Others composing the Joint Committee include Frederick P. Clark, New York, American Institute of Planners, and A. F. Brinckerhoff, New York, American Society of Landscape Architects.

HOW TO

Smooth Out the WAVES

IN YOUR CITY STREETS

St. Paul uses special equipment to rehabilitate asphalt-mat surfacing
Twenty out of the city's 450 miles are reconditioned each year
Anti-stripping additive makes work possible even in bad weather

By GEORGE M. GAREN
Superintendent of Construction and Repair
Department of Public Works
St. Paul, Minn.

IT HAS been a long time since St. Paul has had an extensive capital street-program in its residential areas. Actually, what is now in effect is a streamlined, mechanized maintenance program that keeps streets in good, all-weather condition.

The street surfacing is of the flexible wearing-surface type, composed of about 2 inches of asphalt mat laid progressively of cut-back asphalt and aggregate. In some cases, the natural soils have been bladed into the mat to form an asphaltic concrete. However, most of the streets use a straight, inverted-penetration wearing surface, built up by progressive applications to form the roadway.

The All-Important Subgrade

However, as is axiomatic among street-repair crews, the heart of a pavement is subgrade. Nevertheless, with a flexible type of pavement, even though the subgrade will begin to give way, the surface will often remain tough enough to hold together. Thus, there will be waves in the pavement instead of outright breaks. To correct matters, one must break this tough surfacing with a scarifier.

The policy in St. Paul, in these cases, is to produce a rough stabilizing action of the base with the existing asphalt mat. If the mat is uneven, it is scarified and pulverized — taking with it about an inch of the subgrade — and then relaid. If the pulverized mixture does not have enough bitumen, a city-owned distributor adds more asphalt, and motor patrols mix it in place. The city has 11 of these patrols.

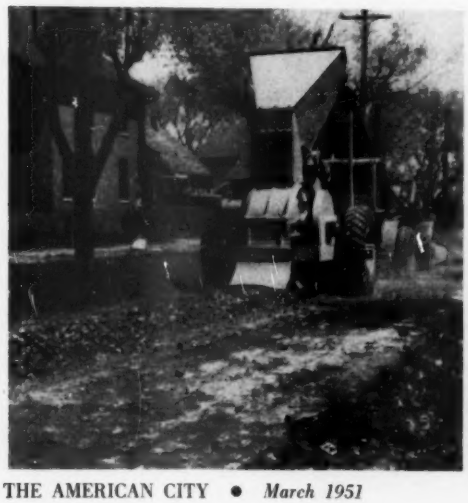
The relaid mat is then sealed with a new wearing surface. The city likes to have an ample crown on pavements of this nature, averaging about 8 inches in 30 feet, so that drainage will be positive.

To make the work easier, the city recently adopted the use of an Athey impact breaker to help in the pulverizing operation. The practice is to scarify the material into large fragments with a motor patrol and windrow it, then pick up the material with an Athey Mobiloader and pulverize it in the new breaker. The breaker produces a maximum size of 2½ inches and avoids producing too many fines, which might in turn reduce the mix stability.

Anti-strip Agent

When it becomes necessary to add asphalt, St. Paul has adopted the policy of adding an anti-strip agent to the asphalt to insure good adherence to the aggregate. The additive, No-strip, is included at the rate of about 1½% by volume, and makes it possible to do the work in bad weather when the material is wet. Last year the street crews were able to work continuously from May to September with the loss of only one or two days.

The work was developed under the direct supervision of George M. Shepard, Chief Engineer for the city, and under the general direction of Milton Rosen, Commissioner of Public Works.



Left: The mobile crusher in action. At the extreme right is the material prior to being crushed. In the center is the material after passing through the machine. On the left is a windrow of material which is ready to be spread and rolled. Below: A front view of the same machine.

How a typical residential street looked after paving.

A parking lot was also included in the repaving program.

LEWISTON, IDAHO

Repaves and Cuts Cost 80%

Engineered program takes advantage of soil conditions and material deposits

By **WILLIAM P. HUGHES**
City Engineer
Lewiston, Idaho

LEWISTON, IDAHO, with a population of about 14,000, maintains 60 miles of streets, 35 of which have been maintained with oil-surface treatment since 1926. While this oil-mat program has given us a certain amount of dust-free, all-weather service, we nevertheless have long recognized the necessity of more substantial design and construction. Abnormal weather conditions in the Northwest the last few years have caused rapid deterioration of our lighter type of street construction.

Since the regular tax levy did not yield enough to take care of the cost of construction, we had to revert to improvement districts. As not many districts had been created since the war, we had to impart an educational rogram through the Planning Board, the Chamber of Commerce, and civic clubs.

We made a survey of all possible sources for material through the assistance of the University of Idaho Materials Laboratory. We also realized the necessity of a stable base and had tests made throughout the districts. In order to safeguard public interests and give the public additional insurance that specifications and plans were consistent with good engineering judgment, we had one of the major oil companies send their paving consultant, Art Waller, to check our deductions. Mr. Waller is widely recognized as a bituminous paving authority in this part of the country.

When the study was complete, the Chamber of Commerce held a hearing with all the civic clubs and interested citizenry. This meeting helped dispel a great deal of skepticism, since we had arrived at a lighter type of pavement than had been laid previously. Our new type was a 2-inch flexible type on a well-compacted and well-drained sub-base. Its cost was one-fifth that of the heavier type.

As a result of the various hearings, five districts were created.

We planned to place the mat directly on the existing soil rather than to import a special base material. Laboratory specimens of the existing base were taken at 300-foot intervals along the streets and were analyzed at the Materials Testing Laboratory of the University of Idaho. The tests showed that the soil was non-plastic, the average CBR was 28.3 and the average liquid limit was 20. Something better had been hoped for; however, in view of the fact that the existing soil had stood up for some 10 years with nothing more than an oiled surface, we felt that satisfactory results could be obtained. The fact that this is a low-rainfall area was another deciding point.

The convenient source of the aggregate for the surface course helped to keep the costs low. Lewiston has a natural deposit of graded aggregate suitable for an RC-4 mix. The deposit is located about two miles south of the city, on the slopes of the Snake River Valley. The deposit has a uniform gradation throughout the entire area. On the basis of tests, it was determined to use the material directly from the pit and to mix it with an RC-4 asphalt, provided that the percentage of asphalt could be controlled. In this respect, the specifications were explicit on the type of mixing equipment which would be allowed.

Bids were opened for the first 32,467 square yards on June 5, 1950, and the

$22,511 contract awarded to McAtee and Heathe, general contractors, of Spokane, Wash.; 20,175 square yards of this constituted a paving district and was paid by assessing the abutting property. The remainder, being on "through" streets, was paid out of the General Fund. Work started June 19, and, with good weather and normal temperatures prevailing, was completed in 15 working days at an average rate of 2,165 square yards per day.

In laying the finish grades, we planned to keep the pavement surface within 5 inches of the top of curb and to keep the crown at a practical minimum, at the same time avoiding any excavation necessitating removal of material from the subgrade. By careful cross-section and grade studies, it was possible to meet those conditions.

Procedure

The first process consisted of preparing the old oil surface treated base. The city crews scarified the existing material to a depth of 6 inches, broke up the oil-bound top material by continuous reworking with a patrol, removed all remaining large material, and rough-graded the base. The contractor then finish-graded with a patrol and compacted the base with a 10-ton tandem roller. The scarifying and rough grading cost 6 cents per square yard. There were a few objectionable chunks of oil-bound material left in the base material, but it was considered unnecessary to remove them. However, a grid roller would have come in handy. An MC-1 prime coat applied at the rate of 0.24 gallons per square yard concluded the base preparation.

The mineral aggregate for the paving mixture was provided by the city at the pit, where it was excavated, mixed, and loaded into trucks by the contractor. For mixing, a Barber-Greene plant was set up at the pit under a belt loader with a 1-inch screen to remove occasional over-size stones that fell into the pit from the overburden.

Placing the Mix

As required in the specifications, a Barber-Greene finisher was used for placing the mix. The advantages of the vertical tamper demanded this restriction. It was necessary to maintain a hot screen on the finisher in order to obtain the desired surface texture. Rolling was accomplished with a 10-ton tandem roller.

After a two-month curing period, an RC-1 seal coat was applied at the rate of 0.20 gallons per square yard. As a cover material, the same aggregate as used in the mix was spread at 20 pounds per square yard, which, it turned out later, was somewhat in excess and presented a clean-up problem for the contractor.

Later in the summer, contracts covering an additional 25,043 square yards of the same type of work were awarded to McAtee and Heathe on the basis of competitive bidding. This brought the total paving for the season up to 57,510 square yards. The work cost about 70 cents per square yard.

The costs of the paving, with the exception of that done on "through" streets, was distributed among the adjoining properties on the basis of the cost per lineal foot of lot frontage, with an adjustment made for lots having more than 80 feet on the street side. In the final analysis, a lot having a 50-foot frontage was assessed $116.

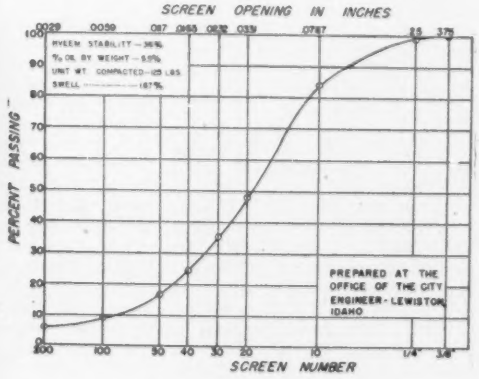
Lack of funds prevented the installation of an underground drainage system, making it necessary to carry all storm water along gutters. Transfer of water from one side of the street to the other is accomplished by 6-inch steel cross drains at the intersections. Reclaimed steel water pipe was used for this purpose. We find that with our low annual rainfall and infrequency of high-intensity short-time storms, this method will work rather well, provided that the cross drains are kept clear of dirt and leaves.

Grades as low as 0.3% on most of the streets paved required unusual care in laying the pavement to the established grades.

Observations on the Finished Work

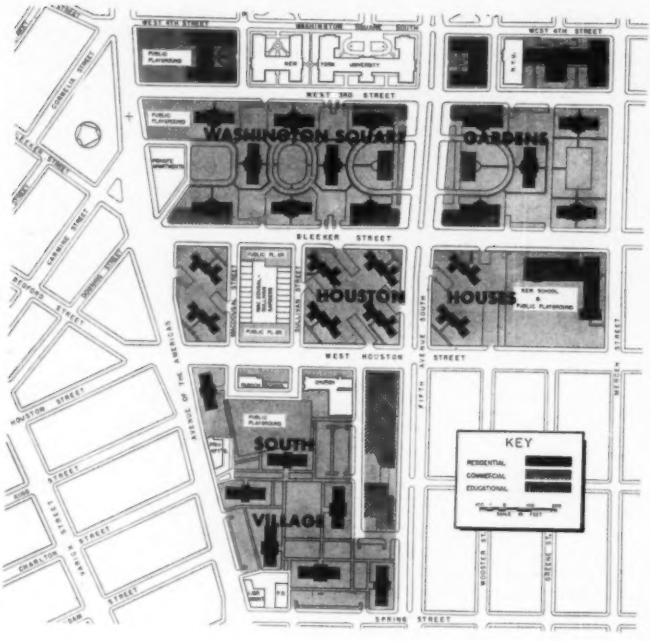
The pavement has been satisfactory in every way with one exception. Immediately following the placing of the pavement in one area, a number of heavily loaded gravel trucks used the street, and in stopping at an intersection caused tearing to develop in an area extending about 100 feet back from the intersection. As a remedy, a second 2-inch course of pavement was laid directly over the first, and heavy equipment restricted from the street for two weeks. The ability of the pavement to withstand industrial traffic is evidenced by the illustration which shows a large logging truck using the road. This type of loading has been continuous since the new pavement was placed, and yet there has been no evidence of any failure. However, it is pointed out that this section of road has an excellent base under it and was known to be capable of withstanding the severe conditions before the pavement was placed, a reminder that flexible-type pavements are no better than the base over which they are set in place.

Some streets have to carry loads like this (left). The paving material met the analysis which is shown below.



New York City Sets the Pace

in integrating public and private redevelopment plans



Left, is a composite site plan of the public and private apartment-building projects which will redevelop a large proportion of the area south of New York City's famed Washington Square.

ONE of the most ambitious specific-area slum-clearance programs prepared by any city has been recommended to New York City's Board of Estimate by the Committee on Slum Clearance Plans, of which Robert Moses is chairman. The Committee was established to enable the city to take advantage of the provisions of Title I of the Housing Act of 1949. In January 1951, the Committee issued seven booklets or prospectuses each describing in detail a specific project in a definite area, and outlining the conditions imposed by the city for private redevelopers. The booklets made it clear that several reputable groups, including a university, a cooperative organization, and a non-profit foundation, have agreed to bid on the sites selected.

Federal authorities have set aside $16,000,000 (which is the city's share of $200,000,000 available in federal grants for 1950-51), and the city $8,000,000—sums which will be used to write down the cost of land to a point where it is economical for private interests to build. In most cases this write-down represents roughly the cost of demolishing existing slum buildings, and of the orderly removal of tenants. The Federal Government also advanced necessary funds for the project studies.

The handsome illustrated booklets, averaging 60 pages in length, point out that the present slum-clearance program for private development is an experimental one. The city's slum acreage is over 9,000. The present public and quasi-public housing programs, including those completed, under way, and scheduled, will have reconstructed 1,328 acres by 1955—about 15% of the total. The projects now recommended by the Committee on Slum Clearance Plans (all except one are located in Manhattan) involve 146½ acres.

Utilities and Street Changes

Despite the size and scope of New York's program, many of its aspects should interest smaller cities concerned with urban redevelopment. Particularly important is the integration of public and private improvements, and careful attention to existing utilities and street changes. This is well-illustrated in the plan on this page showing how the area south of Washington Square in Greenwich Village will be completely transformed if the present proposals are adopted.

Immediately south of Washington Square will be the low, attractive academic buildings of New York University. A new Law School building is now under construction on part of this land. The university will be allocated two small additional areas to complete the land holdings needed for its expansion program, and will make an acceptable offer for this land when available, according to the Committee. What the University does not need will be used for a public-playground expansion.

University Sponsored Project

Next is the area between West 3rd and Bleecker Streets, which will be redeveloped for residential use in a project called Washington Square Gardens. Here will be located some 13 apartment buildings of 19 stories each, with shopping and retail businesses along Fifth Avenue South (the widened present West Broadway), and also at the junction of Bleecker Street with Minneta Street, near the Avenue of the Americas. Plans for 1,956 apartments are contemplated for rental at approximately $35 per room per month. An offer to carry out this project will be made by New York University with the aid of a group of life-insurance companies, and FHA negotiations are well along. Parking would be provided for 587 automobiles, or for 30% of the families in residence.

Below this project will be Houston Houses, a federal public-housing project of approximately 900 units, to be constructed by the New York City Housing Authority. The project has received tentative approval. Two blocks will be reserved for school and playground purposes. An existing group of private apartment-buildings, known as McDougal-Sullivan Gardens, which have communal backyard play space and gardens, will be undisturbed, but flanked by a new park and playground. The public housing project, whose rentals will be at roughly $9 per room, will include a community center, a children's center, and a health center. The new school will have two sections: one

to be used solely by the school, and one that would be shared with the community, including an auditorium, gymnasium, etc.

The Committee's real-estate experts estimate that the two projects could support a land price of about $5 per square foot and shopping facilities a price of $8. Average population densities would be reduced from the present 500 persons per acre to 372 when redeveloped.

South Village, an area of approximately 14½ acres, is proposed for redevelopment by the Foundation for the Improvement of Urban Living, Inc., a non-profit charitable corporation. The recommended plan provides for 792 apartments in 15- and 20-story fireproof buildings. About 85% of the land will be used for small landscaped parks and a playground with a softball field. Parking, shopping, and a moving-picture theater, as well as additional shopping facilities, are included. Studio quarters for some of the many craftsmen and artists in the area will also be provided, and an exhibition gallery. A library-service building is now under construction by the city in the area, which also includes a church and parochial school. Population density will be 330 persons per acre as compared to a present population density of 440.

This Foundation project is proposed to be a non-profit venture and thus partially tax exempt, with rooms renting at $20 per room per month. Normal private rentals would be $33 for each room. The Committee notes that the re-use value for the land is estimated at $4 per square foot for residental areas, and $6 per square foot for commercial and retail areas.

No Discrimination Permitted

In none of the projects proposed by the Committee will discrimination in the selection of tenants be permitted because of race, creed, or color. All of the projects, including those planned in the Harlem area, are planned so that there will be a mixture of privately financed and publicly aided housing within areas of slum property requiring large-scale development. This mixture removes the possibility of social stratification, according to the Committee.

The projects, all in various stages of consideration, must be referred by the city's Board of Estimate to the Planning Commission for approval of the redevelopment plans, with the understanding that the sponsors will present bids based on the general terms of their offers when the land is offered for sale at legally required auction. Other groups may, of course, also bid and suggest modification of the proposals.

Tenant relocation will be under the control of the Board of Estimate, through the Slum Clearance Committee and the Bureau of Real Estate. Tenant relocation offices will be established on each site, manned by experienced private local-relocation services, and site tenants will be interviewed as to their needs and preferences. Low-income site tenants will have first priority in the 55,000 dwelling units of federal public housing to be built under Title III of the Housing Act of 1949, in the 24,000 units in the New York State housing program, and in the many other Housing Authority projects, variously financed. Moderate-income site tenants will have priority in the 11,000 dwelling units to be constructed in the slum-clearance program. (A number of the projects will be built in stages.) They will also receive special consideration for admission to tax-exempt developments throughout the city, and financial assistance will be given if necessary.

EDITOR'S NOTE: In addition to Mr. Moses on the Committee on Slum Clearance Plans are: Phillip J. Cruise, Chairman New York City Housing Authority; John P. McGrath, Corporation Counsel; Lazarus Joseph, Comptroller; and John C. Riedel, Chief Engineer, Board of Estimate. George E. Spargo is Assistant to the Chairman; Harry Taylor is Director, and John J. Beggs, Assistant Director. See editorial comment on page 7 of this issue.

Civilian Protection Group Expands Activities

THAT a "grass-roots" program for civil-defense study and discussion can yield great dividends in building up local initiative and interest, and also produce constructive analysis of plans and proposals made by national and state agencies, is clearly shown by the experience of the Civilian Protection Group, whose headquarters are in New York City.

Since its formation, during World War II, with a core of alumni drawn from the wartime Civil Protection School held at Amherst, the group has been meeting regularly, and growing steadily in size and prestige. Its mailing list, composed of representatives of federal, state, and municipal agencies concerned with civil defense, as well as business, industry, and semi-official organizations, now numbers more than 1,000 names. Because the group's meetings are informal, and all discussion details are "off the record," considerable success has been achieved in developing good working relationships and mutual understanding of the other fellow's problems. Moreover, the meetings of the group have been notable for their emphasis on practical techniques and down-to-earth realism.

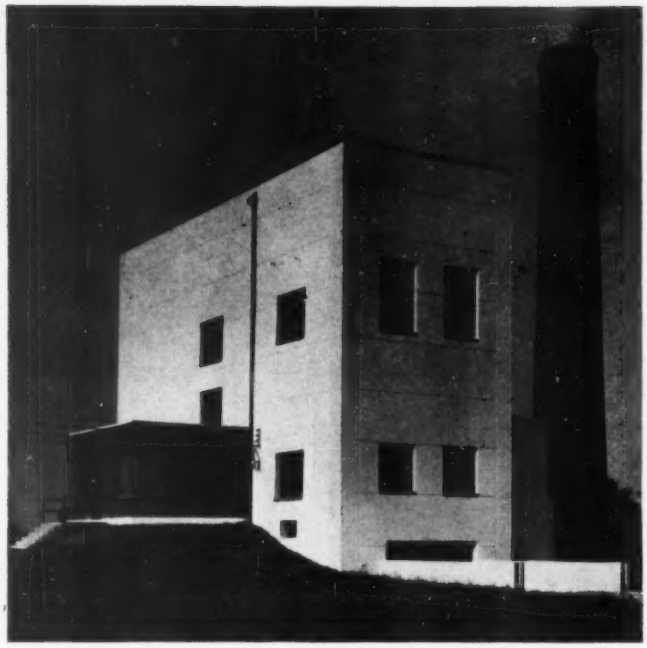
Thus far, the group's operation has been conducted on a completely voluntary basis, but steps are now being taken to formalize the program. The group is establishing a comprehensive library and clearing-house for information on civil defense and industrial protection. It also conducts three different types of meetings:

1. Monthly "protection seminars" for the general membership and others of recognized qualifications. Average attendance is usually more than 100, and the meetings are held in the auditorium of a large metropolitan newspaper.
2. Bimonthly meetings for the technical sections of the group: Health and Medical, Industrial, Legal, Psychological. These working discussions are concerned with specific problems within the spheres of interest of the sections, and usually have an attendance of from 25 to 50.
3. Special "round tables" restricted to a small group of experts—not more than 20 in number, who meet for critical analysis of special timely problems, such as analysis of proposed manuals on sabotage-prevention, fire-fighting, and the New York State proposed civil-defense emergency legislation.

Though the meetings are usually held in New York City, civil-defense personnel from cities along the entire Atlantic seaboard attend them. Dr. Walter L. Cronin, Director of Civil Defense for the City of Cambridge, Mass., never misses a session. The Civil Defense Commission of one state has standing orders that it shall be represented at all meetings, and at least once, persons have traveled from as far away as Colorado Springs to participate.

The chairman of the Civilian Protection Group is S. A. Anthony, Jr., an advertising man, whose Offices at 475 Fifth Avenue (Room 501), in New York City, have been serving as the group's headquarters. Most of the other officers have had extensive experience in the Office of Civil Defense during World War II. They include representatives from public and private agencies, and also several professional people.

As the program of the Civilian Protection Group develops, THE AMERICAN CITY will report further on its activities, as a matter of interest and value to local officials concerned with civil-defense problems.



Well-designed incinerators based on good engineering planning are always an asset to the community. This is the Marrero incinerator, operating in the outskirts of New Orleans. It was designed by Carl Schneider, New Orleans consulting engineer. Nicholas Monohearth furnaces do the burning for it.

Sanitary Landfill Or Incineration?

How they compare in the books of health engineers *

By RALPH J. VAN DERWERKER
Senior Sanitary Engineer
Federal Security Agency
Division of Sanitation
Public Health Service

LEST there be misunderstanding, let me point out that both sanitary landfills and incineration are acceptable to health authorities if used correctly.

Open dumps, in contrast, are not acceptable. They are breeders of flies and rats, both of which may be agents of disease transmission. Flies are well known for their filthy habits and as transmitters of such enteric diseases as dysentery and diarrhea. Rats are of public-health importance primarily for their role as host to the flea that transmits murine typhus fever. Open dumps are obnoxious not only because of their unsightly appearance but because of the smoke and odor nuisances they create. Furthermore, they may even be responsible for polluting near-by streams.

Hog-feeding with raw garbage also is unacceptable. Authorities generally regard it as the primary factor in the high incidence of trichinosis. Studies by the National Institute of Health indicate that one in every six persons in the United States has some trichina infection. Of those infected, 4.2%, or approximately one million people, are infected sufficiently to experience clinical symptoms of the disease at some time during their life.

Advantages and Shortcomings of These Methods

Both the sanitary landfill and the incinerator have definite advantages:

Sanitary Landfill

- Is economical
- Is flexible
- Eliminates fly and rat breeding
- Disposes of all types of refuse
- Is quickly organized and established
- Utilizes waste land
- Renders waste land usable for certain purposes
- Is sanitary

Incineration

- Reduces decomposable organic material to ash
- Eliminates fly and rat breeding
- Eliminates long hauls
- Can be located in or near built-up areas
- Is sanitary

Similarly, they may have certain weaknesses:

Sanitary Landfill

- Improper construction may cause surface cracking, difficulty of truck travel in bad weather, and untidiness
- Salvage operations may be a nuisance
- Fills are generally unsuitable for heavy construction
- Seepage from fills into streams is high in BOD and may increase stream pollution
- Excavations in old fill areas may produce objectionable odors
- Explosive gases may seep into basements of buildings on a fill

Incineration

- Less flexible in meeting community growth
- Waste only partially disposed of—dump is still necessary for ash and non-combustibles

* Delivered at the Refuse Collection and Disposal Conference, Institute of Local and State Government, University of Pennsylvania.

More personnel needed for operation
Greater possibility of accidents
Working conditions more disagreeable during hot weather

When confronted with a choice, municipal officials must study certain basic questions.

The availability of funds is one. The problem of a site is another. It is possible that in a given case the only available landfill area is so far from town that hauling costs will make this method more expensive than incineration at a midtown site. When considering landfill sites, the possibility of stream or water-supply pollution from seepage water must be recognized.

Comparative Operating Costs for the Two Methods

Operating costs for sanitary landfills vary considerably, depending on hauling distances, method of operation, and management. In the type of operation usually considered as typical, i.e., where haulage is to the outskirts of town, dirt for cover is obtained by trenching ahead of the fill. Under efficient management, the operating costs of the typical landfill should average about 50 cents per ton of refuse. One equipment manufacturer has developed a cost chart that sets up hypothetical five-year programs for cities of various population levels, from 5,000 to 300,000. According to this chart, one operator and one machine can handle the sanitary landfill for cities with a population up to 40,000. The estimated amount of refuse for the average community of this population group in five years would be 80,000 tons. The landfill costs are estimated as follows for five years:

Equipment	$ 9,300
20 acres of land	4,000
1 operator	11,440
1 laborer	6,240
Maintenance and operation of equipment for five years	6,000
Total	$36,980

In this estimate, the cost per ton for disposal is 46 cents. On smaller projects, such as those for cities with a population of 10,000, the equipment and operator are not needed full time on the landfill site. Consequently, they can be used for other community projects, such as streets, parks, etc. In this manner, full-time costs are not charged to the landfill. Any small community, through efficient use of equipment and operation, can thus insure economical operation of the fill.

Incinerator costs have increased substantially in the past few years. Construction costs which have been reported to us on a few plants indicate a range of $1,500 to $3,000 per ton of capacity, depending largely on the design and size; but one must remember that capacity is rated on 24-hour use, and most incinerators operate only for an 8-hour day. Under this operation, usable capacity is three times as high. Operational costs, including amortization, range from $1.50 to $2.50 per ton of refuse incinerated.

Current Trends in Refuse Disposal

Some of the current trends in refuse disposal are interesting. A survey made in 1938 of disposal methods of 764 cities is compared below with one made in 1947:

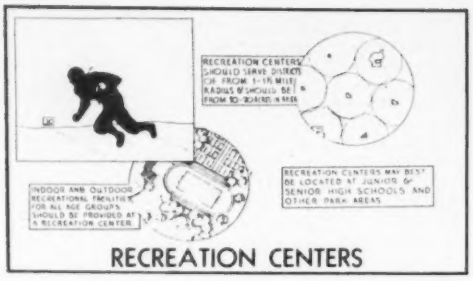
	1938	*1947*
Hog feeding	53%	41%
Dumping—all kinds	28%	37%
Incineration	28%	26%
Sanitary landfill	....	24%
Reduction	1.5%	1%
Dumping at sea, in lakes, or in rivers	1%	1%

William S. Foster, a fellow speaker on this panel, adequately summed up this subject in his article "Summarizing the Sanitary Landfill," published in THE AMERICAN CITY for April 1947. He says:

"Experience seems to indicate that the sanitary landfill finds particular favor in cities with an abundance of available land area which will not be needed for business or industrial purposes later. It is economically useful to the small city that is unable to build an incinerator, and it is a useful stopgap measure for larger cities that have not yet completed incinerator projects. If a large city has convenient areas where this filling operation can take place and has skilled personnel to operate it, it may very well find that the sanitary landfill is a permanent economical method of refuse disposal that meets exacting public-health requirements."

We in the public-health field can approve either sanitary landfill or incinerators. It has been pointed out that garbage from over 40% of the cities surveyed in 1947 was fed to hogs without cooking. Thus, while cities and states have taken elaborate precautions to protect people from any diseases formerly spread through water, milk, and food, many of these same cities and states are not only failing to provide safeguards against the spread of trichinosis infection but, by permitting the feeding of raw garbage to hogs, are actually contributing to the spread of the disease.

The sanitary fill, when it is operated with the correct engineering supervision, meets the city's health standards. This fill work is performed by Kansas City, Mo., by means of a Caterpillar tractor and Trackson loader.


RECREATION CENTERS
INDOOR AND OUTDOOR RECREATIONAL FACILITIES FOR ALL AGE GROUPS SHOULD BE PROVIDED AT A RECREATION CENTER
RECREATION CENTERS MAY BEST BE LOCATED AT JUNIOR OR SENIOR HIGH SCHOOLS AND OTHER PARK AREAS

SUPERVISED PLAYGROUNDS
SUPERVISED NEIGHBORHOOD PLAYGROUNDS ON SCHOOL PARK OR OTHER PUBLIC PROPERTIES ARE THE BASIC UNITS OF THE RECREATION SYSTEM PLAN
ELEMENTARY SCHOOL SITES WHEN USED AS A NEIGHBORHOOD PLAYGROUND IN THE RECREATION SYSTEM SHOULD HAVE AN AREA OF AT LEAST 5 ACRES
THERE SHOULD BE A PLAYGROUND WITHIN ¼ MILE OF EVERY CHILD

Planning Parks and Recreation

(Part I of a Two-Part Article)

1. The Need for Recreation

By THOMAS C. JEFFERS
Landscape Architect
Fellow, American Society of Landscape Architects

WHEN America was still largely rural in character, recreation was not a matter of public concern. On farms and in small towns there was ample open space for recreational needs; but the growth of cities created crowded living conditions, higher land values, and less open space for any form of outdoor recreation. Failure to provide ample open space created undesirable living and public health conditions and increased juvenile delinquency and crime. The larger cities are now paying an enormous price to remedy, at least to some extent, these adverse conditions.

Recreation areas and facilities are necessary to provide leisure-time opportunities for the families of the community. Playgrounds bring to our children a certain happiness and joy in life, which leads to harmonious development and freedom from tension. This signifies that a basic need for new experience, friendship, achievement, and recognition of beauty is being satisfied. The development of personality through group play, under proper supervision, leads to character building, prevention of delinquency, and good citizenship.

Playgrounds also lead to better physical development and good health. According to the American Medical Association and the National Education Association, boys and girls of kindergarten and elementary-school age need four to five hours of outdoor play each day, and older children require at least two hours. Shall our children be left to their own resources, with the public street as their play space, or shall the community provide the necessary areas and facilities under capable leadership? The answer should be obvious.

The reduction in the daily and weekly work period in recent years has resulted in greatly increased leisure time for adults. Provision must be made to put this leisure time to constructive use so that it may lead to a broader and better life and not be dissipated in such wasteful uses as will end only in disappointment and social liability.

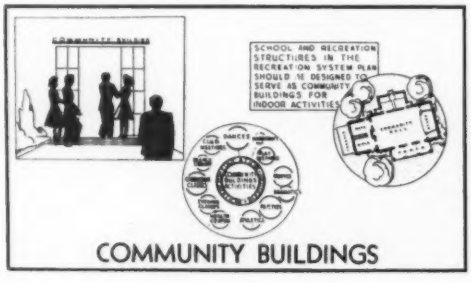
Year by year the span of human life is increasing. At the same time the age of retirement from active employment is being reduced. There are now more people over 60 years of age than at any time in our country's history. We are told that this will increase in years to come. They should be protected and their leisure hours provided for.

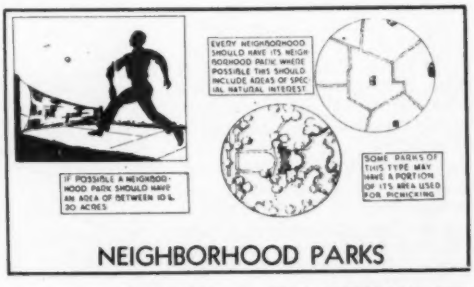
What better place to provide for all adult needs than at the recreation center, where facilities can be provided for both outdoor and indoor needs?

2. The Community's Responsibility

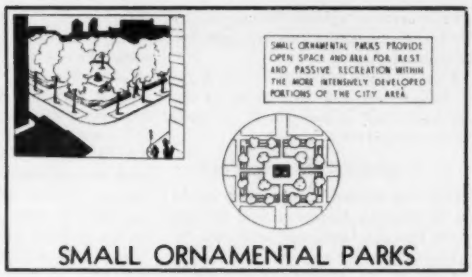
The providing of adequate park and recreation facilities has been accepted by most communities as a definite and important public responsibility. Parks and recreation areas form a vital part of the physical structure of the community and affect the life of every individual living in that community.

Many cities and towns throughout the nation, because of increasing citizen demand, are about to embark upon a program for the establishment of park and recreation facilities or have under consideration the early establishment of such a program. Other communities, already having some facilities, are planning their expansion.


COMMUNITY BUILDINGS
SCHOOL AND RECREATION STRUCTURES IN THE RECREATION SYSTEM PLAN SHOULD BE DESIGNED TO SERVE AS COMMUNITY BUILDINGS FOR INDOOR ACTIVITIES


NEIGHBORHOOD PARKS
EVERY NEIGHBORHOOD SHOULD HAVE ITS NEIGHBORHOOD PARK WHERE POSSIBLE THIS SHOULD INCLUDE AREAS OF SPECIAL NATURAL INTEREST
IF POSSIBLE A NEIGHBORHOOD PARK SHOULD HAVE AN AREA OF BETWEEN 10 & 30 ACRES
SOME PARKS OF THIS TYPE MAY HAVE A PORTION OF ITS AREA USED FOR PICNICKING

SOME LARGE PARKS SHOULD INCLUDE ACTIVE RECREATIONAL FACILITIES SUCH AS TENNIS COURTS, GOLF COURSES, BASE BALL FIELDS, ETC.
THERE SHOULD BE PARKS FEATURING WATER DISPLAY OR WATER SPORTS.
OTHER PARKS IN THE LARGE PARK SYSTEM SHOULD BE WHOLLY NATURALISTIC AND USED FOR PICNICKING, GROUP CAMPING, HIKING, RIDING AND NATURE STUDY.
GOLF COURSE
LARGE PARKS


SMALL ORNAMENTAL PARKS PROVIDE OPEN SPACE AND AREA FOR REST AND PASSIVE RECREATION WITHIN THE MORE INTENSIVELY DEVELOPED PORTIONS OF THE CITY AREA.
SMALL ORNAMENTAL PARKS

The inadequacies of existing facilities should be corrected and past mistakes must not be repeated in communities about to undertake their initial park and recreation development.

To make the most of the wealth of knowledge gained during the past years, it has been found that the recreational life of the people must be planned for as thoroughly as education, health, and other elements of public welfare.

3. Park and Recreation Council

It would be well, before attempting to develop any plan or program to provide for the recreation needs of a community, for all of those organizations and individuals interested to form a recreation council, on which all have representatives, for consideration and adoption of some basic principles to be followed. These principles would represent the goal toward which all community efforts should be directed. They might well include the following:

4. Basic Principles

(a) A survey of the community, to include its government, its financial potentialities, its people, its neighborhoods, and last, but perhaps more important, its existing community facilities and services.

(b) An evaluation of existing community park and recreation facilities. A community park and recreation plan to be completely effective must provide for the fullest use of all available resources, including publicly owned land and buildings, and must be integrated with the planning for all other community services.

(c) The local planning agency and recreation, park, and school boards or commissions should be represented on the council and should cooperate in the acquisition, development, and use of parks and recreation areas and facilities.

(d) The services provided should be all-inclusive, operated on a 12-month basis, and planned to provide for the needs and varied interests of all classes and age groups from every section of the community. They should be designed to enrich individual and community life and are valuable only insofar as they accomplish this purpose.

(e) The program should be administered by the highest type of trained recreational leadership available. Supervision should be provided for recreation areas for the entire time they are open to public use. The success or failure of an area depends largely upon the supervision and program provided at that area.

(f) Services at public parks and recreation areas should be provided through adequate appropriations from public taxes, augmented, if need be, by voluntary contributions.

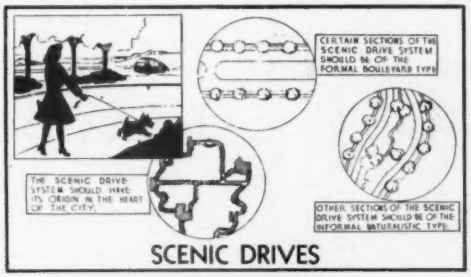
(g) Adequate development and maintenance of the park and recreation areas should be provided from public taxes, also augmented if need be by voluntary contributions.

5. Planning a Community System

The plan for a park and recreation system is concerned primarily with the location, size, and adaptability of sites for park and recreation uses and to a lesser degree with detailed plans for development and operation. There is a close interrelation between park and recreation areas and other community facilities and services such as schools, libraries, major thoroughfares, industry, transportation, health, sanitation, and all other factors contributing to better living conditions in the community. The planning of the park and recreation system must be coordinated with these other necessary elements of community life.

In the selection of individual sites for neighborhood parks and playgrounds, playfields, large parks, and other facilities, the suitability of the area topographically must be considered as well as means of access to the area and its location in relation to the people it is intended to serve.

This planning can be done more expeditiously and with greater economy by a properly trained technician experienced in this type of planning work, and he should be consulted before any site is chosen. At least a part of the site should be adjacent to a street or highway, as


CERTAIN SECTIONS OF THE SCENIC DRIVE SYSTEM SHOULD BE OF THE FORMAL BOULEVARD TYPE
THE SCENIC DRIVE SYSTEM SHOULD HAVE ITS ORIGIN IN THE HEART OF THE CITY.
OTHER SECTIONS OF THE SCENIC DRIVE SYSTEM SHOULD BE OF THE INFORMAL NATURALISTIC TYPE.
SCENIC DRIVES

SPECIAL FEATURES SUCH AS AMPHITHEATRES FOR DRAMATICS CONCERTS AND OTHER TYPES OF PASSIVE RECREATION SHOULD BE AVAILABLE IN NATURALISTIC SURROUNDINGS
SUCH SPECIAL FACILITIES AS SWIMMING POOLS ZOOS MUSEUMS ETC. SHOULD BE AVAILABLE TO THE AVERAGE CITIZEN
OTHER SPECIAL FEATURES SUCH AS FISHING AND BOATING SHOULD BE MADE AVAILABLE IN THE PARK SYSTEM.
SPECIAL FACILITIES

interior areas completely surrounded by developed or private property are not recommended.

A preliminary use plan is very helpful in arriving at a decision as to the size and exact boundaries of an area under consideration.

6. Implementing the Plan

Different methods of operation are in use in different localities. The method which best fits local conditions and requirements will no doubt prove most satisfactory. A department of the city or town government must be responsible for the supervision, operation, and maintenance of the park and recreation areas and facilities. This responsibility must not be secondary to any other function of that department.

After approval of the park and recreation plan by the proper authorities, steps should be taken immediately to set up a program and priority of site acquisition. Funds should be included in the budget and made available by the municipal authorities as soon as practicable so that sites on vacant land may be acquired before they are developed for other uses and thereby become unavailable.

7. Planning for the Neighborhood

The neighborhood may be regarded as a certain geographic segment of the community whose inhabitants, by tradition, generally participate together in social, athletic, recreational, and other activities. Distinct racial concentrations may have a decided bearing on this traditional background. Other important factors are physical barriers, such as railroad lines, traffic arteries, streams, hilly topography, and business and industrial development. In a small community the neighborhood may be considered to include all of the area and families served by an elementary school—usually a population of 3,000 to 5,000 persons. Normally, each neighborhood will require a playground which should be located as nearly central to the area to be served as a suitable and adequate site can be found. If a population of over 5,000 persons is to be served, more than one playground will prove more satisfactory.

8. Outdoor Space Requirements

Certain standards for size of areas in relation to the population to be served are desirable and should be obtained if at all possible. It must be realized, however, that in certain densely developed neighborhoods, where the cost of land is very high, it will be difficult, if not impossible, to maintain these desirable standards. In these cases smaller areas will have to suffice and can serve to good advantage if extreme care is taken in their planning of the use to which they are put so that the maximum service is obtained from the smaller area.

Most park and recreation authorities are now generally agreed on the following desirable standards: There should be one acre of publicly owned park and recreation area for every 100 persons. About 40% of this should be in close-by park and play areas or within walking distance of the people who are to use them. There should be one acre of neighborhood park area for every 800 to 1,000 persons, and one acre of active recreation area for every 400 persons. Also it is desirable to have outlying park and forest reservations, possibly some distance outside of city or town boundaries and considerably larger in size. Their location and size will depend upon local conditions and the availability of a site, preferably with some outstanding scenic or other natural features which it is desirable to protect and make available to the people.

9. Parks and Recreation

Generally speaking, recreation may be divided into two main groups—(1) that which requires no organized program or supervision, and (2) that which requires leadership and direction of groups of varying size and is usually provided at playgrounds and playfields. Both large parks and neighborhood parks should provide some facilities for active recreation, depending on topographically suitable areas' being available at locations where they would be accessible to near-by residents. These would be in addition to the incidental play areas generally provided near picnic grounds and which usually are not supervised.

10. Neighborhood Parks

These are intended to supply the open breathing spots which are so essential to satisfactory urban living. They are seldom less than 5 acres and often as large as 20 acres, and should be provided within one mile of each home.

The neighborhood park is usually designed as a landscaped area with informal planting and open lawns, with walks, benches, and sometimes a small picnic ground and play facilities for small children. An area of varied topography lends itself to a more interesting development and advantage is often taken of some scenic feature—valley, woodland, ridge, or outlook. Land unsuitable for building development is often used for this purpose. Its usefulness is largely dependent upon its accessibility.

Wherever possible, sufficient area should be made available to provide for the neighborhood park needs adjacent to or in combination with either the neighborhood playground or the playfield. This will permit an integrated design and development of the area so that each use will augment the other. Thus a more interesting layout will be possible, which should result in economies in development, maintenance, and operation. If this combined use is not possible, separate facilities should be provided for both park and recreation needs.

11. Large Parks

A system of larger parks with connecting pleasure drives or parkways, encircling the urban area, is being provided or planned by many communities.

An area of from 100 acres upward is desirable, and it is often located entirely outside the community boundaries. In the location of such parks natural features, such as rugged areas, forests, streams, river banks or historic sites, are dominant factors. Their development would depend upon their size and natural site characteristics, but their treatment is generally natural and informal. Roads, which should be kept to a minimum, provide access to centers of greatest use. These include picnic grounds, boating and winter sports facilities, day camps, zoological gardens, nature museums, and recreation areas. Toilet facilities and drinking fountains are essential. Hiking trails, bridle paths, and wild-life areas are often included. Parking facilities must be provided at all centers where autos are likely to congregate.

Each park of this kind must be designed individually to fit conditions of the site.

PART II of this article will appear in the April issue. This final installment will discuss Recreation Areas, Recreation Building or Field House, Special Recreation Facilities, Lighting of Areas, and Planning of Individual Areas and of Buildings. The author has also supplied a Selected Bibliography on Park, Recreational, and Athletic Facilities. The illustrations for PART I have been reproduced from those on page nine of Monograph No. 4 of the National Park and Planning Commission, Washington, D. C., June 1950, titled *Open Spaces and Community Services—A Portion of the Comprehensive Plan for the National Capital and Its Environs.*

Recreation Congress Proceedings

THE Proceedings of the Midcentury National Recreation Congress, held in Cleveland in October 1950, have just been released. Copies may be obtained for $2.25 apiece from the National Recreation Association, 315 Fourth Avenue, New York 10, N. Y. The 176-page pamphlet contains numerous articles, of general interest on recreation planning and future trends.

The Wheels of a City Must Turn

An analysis of the new conditions surrounding municipal purchasing

By JOHN M. PIERCE
Purchasing Agent
City of Wichita, Kans.

THE WHEELS of activity in a modern city must turn forward 24 hours a day. Now, it is once more necessary for our nation to set up a national-defense program.

It is doubtful that we shall be foggy this time. The national government has the experience and records of the former control board. A great many purchasing agents have their experience and records. It is our hope that better priority will be established this time for governmental units.

For two years in the last war, the City of Wichita had about the same priority as any business firm for purchasing critical items for operating such vital departments as public safety and public health. But procurement was exceedingly difficult. After a higher rating was granted, we never experienced any untoward difficulty in getting material. We believe that governmental units should have a priority rating exceeded only by defense orders. The 24-hour operation of many municipal departments—police, fire, public health—wears out equipment. Public service requires that this equipment be repaired or replaced. Cities are not in the investment business. Also they are controlled by rigid operating budgets. They cannot stock-pile. In essence, cities and other governmental units are controlled *even without priority or material boards*, as to how much or what they can buy.

Urban Population Growth

Meanwhile, these changing times are putting a different complexion on the general field of governmental purchasing. Our general population is becoming more and more urban. The recent federal census showed the population of the Sunflower State was off slightly. Yet, there were population increases in virtually every first- and second-class city in the state. This urban growth is by no means confined to Kansas.

The population of Wichita has grown to nearly 52,000, or about 45%, since 1940.

Our square-mile area increased by about 11% in 1949 and 1950—1 square mile in 1950 and a record-breaking 2 square miles in 1949. More than one-fourth of all the street paving in Wichita has been laid *during the last three years.* Expansion programs have been completed within the past year

John M. Pierce

and a half at both the city water-supply plant and the sewage-disposal plant. Police and fire personnel has been enlarged about 30% since 1945.

What's ahead? More growth. Right now the city is anticipating a contingent of some 6,500 air reservists in connection with location of a $37,500,000 air base here. This is additional to the permanent air-base personnel.

Meanwhile, with production of the B-47 jet bomber centering at Boeing, more and more people are moving to Wichita. Many of them are guessing that Wichita's phenomenal population growth in the last decade will be a drop in the bucket compared with the future.

This means extension of city services, with complex purchasing problems. Everything costs more. Yet, the city government must expand. In the last three years the city has added two new fire stations, replaced its outmoded city-prison farm with a modern jail building, constructed a modern communications building for use of the police and fire radio systems. Last year 40% more sanitary sewers were laid than during any previous year.

Because of important war production here, Wichita is understood to be on the No. 1 atomic-bomb target list. So Wichita was one of the first cities in the nation to start a full-time civil-defense effort in the current situation. The unit went to work September 1, 1950. Procurement of items needed for civil defense poses another purchasing problem.

One of the finest assets possessed by the city is the universal good will of the vendors. For public relations reasons we have not cultivated outside vendors. But the doors are *always* open to all vendors who can supply the city with good standard brands of merchandise. It would be possible to purchase over 90% of all items used from 12 to 18 vendors. But that has never been the practice here. Instead, during the year, the city purchases from over 400 local vendors. The fair, open-door treatment has built up a loyalty worth untold cash in time of need. This was a great help during World War II. We know that we can again depend on our friends—the vendors.

The City Purchasing Agent of Wichita works between the Manager and the departments, but with little reporting to the Manager.

Controlling Factor

However, all departments and division requisitions are controlled by the annual-budget allowances. All purchases of equipment covering bids, awarding contracts, etc., are reported to the Manager. With Wichita's great expansion programs, the bid and contract items are naturally numerous and large.

Last year, while Wichitans were spending $28,000,000 on building construction, the city laid 25 miles of paving and 29 miles of sanitary sewer. *Expectations are that these programs will continue—and perhaps be stepped up—during* 1951.

While we would far rather purchase in peacetime than during any defense-preparedness program, or war itself, we believe that past experience has taught us three valuable needs:

To operate a better maintenance and operating program to protect equipment against wear and tear;

To make a time study of all items needed, and to budget purchasing and deliveries on a scheduled basis; and,

To do our best to understand all rules and regulations issued by the national government—and cooperate constantly.

Do Clean-Up Campaigns Pay Off?

Evidence from cities that have tried them show they do

WHAT do spring clean-up campaigns mean to a city administration? Generally, a lot of work. Someone has to prepare special news stories and handbills. Someone else must make radio announcements. Another group may be assigned the task of arranging a parade of city equipment and floats showing good sanitation. Department heads have to enlist the support of civic leaders and ask for their active participation.

All this gets results, often double-barreled. The first result is a monumental load on the refuse-collecting department. Householders remove trash from their yards that has accumulated for all winter. They clean out their basements and attics, and give the crews two or three days of making probably the year's peak collections when the whole city is watching.

The public's next reaction apparently is a drop back to the old, careless habits that existed prior to the drive. The steam generated in favor of a clean city apparently soon falls away. That presents the question: is all this effort worth while?

The answer is YES, and it is given by such experts as John Flockhart, Supervisor of Street Cleaning, Newark, N. J., confirmed by Russell B. McClure, City Manager of Dayton, Ohio, and well known as a municipal administrator, and further confirmed by Robert Hopson, Chief of Refuse Collection, in Richmond, Va. These are some of the reasons:

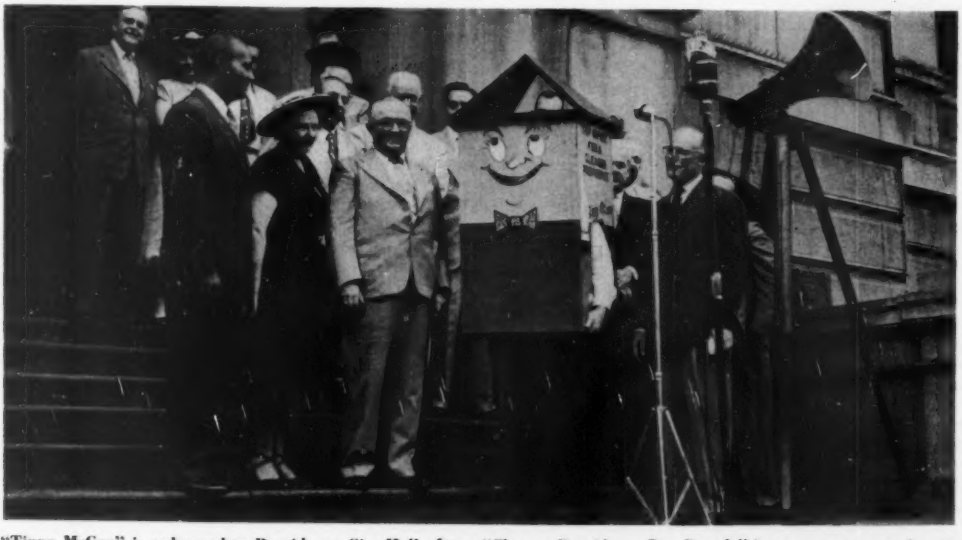
First, it physically rids the city of a great accumulation of trash, thus reducing fire hazards, and removes nuisances.

Next, it brings the refuse-sanitation service directly to the attention of the public. Some are bound to purchase new garbage cans, pay closer attention to wrapping the garbage, and placing the containers in a convenient spot for the crews.

Wins Public Support

And finally, it does the important task of winning public support for the refuse-collection service. Ben Franklin made the shrewd observation at one time, that in order to win over an enemy, he asks that enemy to do a favor for him. While the public cannot be classified as an "enemy," many times it is

The public understood how its refuse-collecting equipment worked after Richmond, Va., had completed an elaborate parade emphasizing better sanitation.



"Tippy McCan" is welcomed to Providence City Hall after a "Cleaner Providence Day Parade" last summer, part of an intensive drive by the Providence Chamber of Commerce, cooperating with the city. Campaign featured a block organization plan, still in operation. Fine press and radio teamwork helped make the year-round clean-up program a success. Tippy's face, "immortalized" in numerous cartoons and sketches, appears on every Providence rubbish can in brilliant shades of red, gray, and green. The Public Works Department reports the cans are now filling up faster than before.

These two boys had a good time playing catch in a sanitation parade which was held in Dayton, Ohio, last year.

Posters are also a big help. Here is one used in New Haven. Chamber of Commerce sponsored this campaign.

Big Dempster Dumpster containers used in Boston have proved the answer to sanitation problems in crowded, low-rent areas (left). Note the appeal for cleanliness on the side of the container. Also note the relatively neat appearance of the narrow alley in the background. This picture, incidentally, was taken without prior knowledge of or preparation by Boston city officials.

antagonistic. By asking the public to go out of its way to help in this phase of municipal sanitation, you overcome that sense of antagonism.

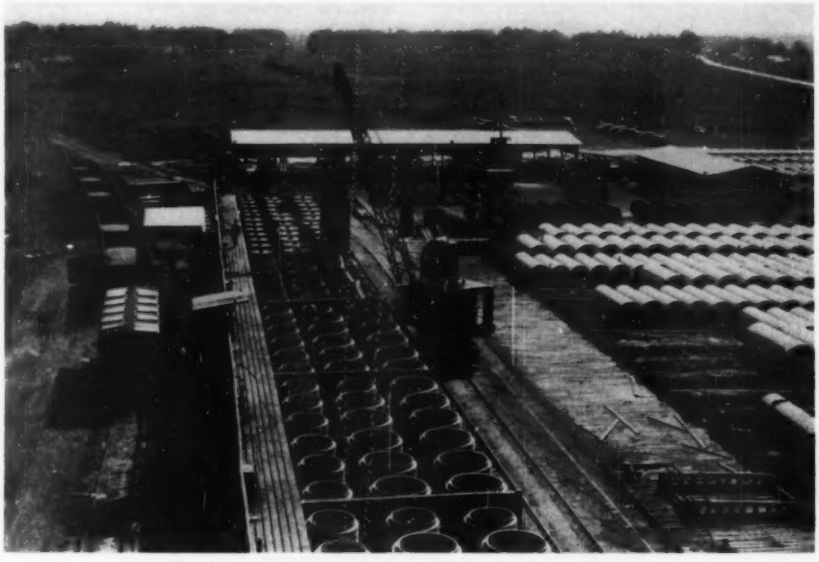
Even more important than a single drive are continuous appeals for public cooperation. Trucks pass through the street daily collecting refuse. These should not only present a smart appearance that reflects efficiency, but also should carry requests for cooperation.

In Newark, Supervisor Flockhart likes to form public committees in various sections of the city to help maintain a cleanliness by public appeals. In Jacksonville, Fla., N. M. Ulsch has prepared a detailed and entertaining movie that shows how refuse should be prepared and street litter should be controlled. This movie is shown before the local schools and is a great favorite.

So follow the advice of experts, and ask your community to help make this sanitation program a good one.

Billings, Mont., likes Gar Wood Packer bodies painted gleaming white, mounted on GMC truck chassis. Note the personal appeal for public cooperation on truck body.

A new impounding reservoir, tapping a stream 18 miles from Mobile, provides the answer to this important port city's water-supply problems



Pipe from which transmission main is made was manufactured in a large plant especially assembled for the project.

How Big Creek Came to Mobile

By J. B. CONVERSE
J. B. Converse and Co., Inc.
Mobile, Ala.

THE 1950 census for the metropolitan area of Mobile will show a population of about 200,000. The story of the development of the water resources to serve such a population has several interesting phases.

Mobile attempted to distribute a public supply, through wood-log pipes, over 100 years ago. The first successful organized attempt to furnish a city supply, however, occurred in 1888, 63 years ago. This supply has been used up to the present time. For over 50 years, this supply consisted of the untreated (except for chlorination) low flows of two creeks. During rains, the city could obtain its supply from two large reservoirs without the expense of pumping. This was satisfactory prior to Mobile's phenomenal wartime growth and its rapid development as a port. When the tremendous increase occurred during World War II, it became necessary to pump the free flow of the creeks continuously, bringing about a situation that was a threat to the health of the community.

This threat was quickly recognized by the War Department. Mobile had two ship-building plants, a large air depot, and numerous industries involved in important war contracts. As a result, our firm was employed to build a 20-mgd filtration plant in 1942. This plant went into operation in 1943, and Mobile, for the first time in its history, had filtered water. The switch from a free flow of two creeks to a filtered supply in the midst of the war activities in the area is an interesting story within itself. This article is, however, concerned with the new supply now being developed.

Mobile River Records

In 1936, one of our largest industries, realizing the rapid industrial growth in this area, employed this firm to stream-gauge two large creeks for a period of one year. The Mobile River records are good, but this supply is contaminated with salt during high tides, especially hurricane tides, and also during low flows. There were practically no data on creek flows. One year's record on two creeks did not offer much hope for the situation; still, this record was obtained. Fate intervened, and this year, for which a complete record was made, turned out to be the year of lowest rainfall in the 75-year history of the Mobile Weather Bureau.

Supply Proved Inadequate

Later, this record proved conclusively that the dry-year supply for the metropolitan area of Mobile was less than actual pumpage during the war. In 1944, the federal authorities gave careful consideration to the development of the new Big Creek supply, which we had been studying for several years. Critical materials ruled against the construction, however, making it necessary to secure a temporary supply for the emergency. With the war over and materials available, the Big Creek supply was again under consideration.

No local funds were available for adequate research, study, surveys, and plans. Consequently, the city turned to the Federal Works Agency for advance-planning funds, and obtained a loan of $75,000.

The study made by our firm showed the possibility of impounding a supply

of 100,000,000 gallons per day on Big Creek with an earthen dam and a concrete spillway located away from the dam. The site of this supply was about 10 miles from the filtration plant.

Industry Cooperation

Final plans for the reservoir, dam, spillway, pumping station, and pipelines showed a cost that would have been a great burden on the city. Nevertheless, everyone recognized the necessity for the supply; and after negotiations with two of the large industries here, the problem was eased when the industries joined with the city in the project. Each requested a minimum use of 10 mgd of the plant's total capacity.

In view of this, we revised the plans for the pumping station and pipeline, and added a 50-mg, raw-water storage reservoir to the project. Revenue bonds based solely on the earnings of the project were then sold in the amount of $7,000,000, allowing the work to begin.

The supply comes from Big Creek in Mobile County, 18 miles from the business area of the city. The supply available is 100 mgd. An analysis of the raw water is as follows:

Analysis of Water from Big Creek

Silica (SiO_2)	7.5	ppm
Iron and aluminum oxides (Fe_2O_3 and Al_2O_3)	1.0	"
Chloride (Cl)	3.3	"
Sulfate (SO_4)	0.8	"
Calcium	2.1	"
Free CO_2	6.0	"
Total alkalinity (as $CaCO_3$)	5.0	"
Soap hardness (as $CaCO_3$)	8.0	"
Color	44.0	
pH	5.8	
Total dissolved solids	24.5	ppm

The impounding reservoir has a water-surface area of 3.593 acres. The dam is an earthen dam approximately 1 mile long, with a maximum height of 77 feet. A reinforced-concrete box 10 feet by 20 feet will be constructed as a diversion channel for the stream. The material at the site is sand-clay and clay. The slopes for the upstream face are 1 to 3 feet; and for the downstream, 1 to 2½ feet. A clay core and a steel-sheet-pile cut-off wall will be constructed.

The spillway is of reinforced concrete, located approximately a half mile east of the dam. Seven tainter gates 10 feet by 31 feet will be installed. The maximum discharge capacity is 35,000 second-feet. An existing paved highway will be relocated and will cross the spillway and dam. The contract for the dam and spillway has been awarded to L. L. Jarrell, general contractor, of Mobile, at his low bid of $1,362,947.50. The dam-site borings were made by the Raymond Concrete Pile Company, of New York.

The pumping station will be located on an arm of the reservoir 9 miles from the filtration plant. The contract for this station has not yet been awarded. The ultimate installation includes nine synchronous motor-driven pumps of 100-mgd capacity, at a maximum head of 245 feet. The power will be purchased.

A length of pipe is going into place to the exact line and grade, thus forming a portion of the new main.

The line from the pumping station to the reservoir at the filtration plant will be 60-inch, reinforced concrete-pressure pipe. The reservoir has a water-surface elevation of 220 feet above sea level. From this reservoir, 48-inch, reinforced-concrete pressure pipe will be used for the industrial area of North Mobile. A contract has been awarded to the Lock Joint Pipe Company, of East Orange, N. J., for 47,250 feet of 60-inch pipe, and 35,700 feet of 48-inch pipe, together with specials, for $2,007,871. A contract has been awarded to the Carruth Pipe Line Corporation, of Baton Rouge, La., for installing the pipe at $387,579.

After completion, the project will be operated by the City of Mobile for the Water Works Board. E. M. Stickney is Superintendent of Water for the city.

The writer's firm has had the privilege of serving as engineers for design and supervision of construction. The personnel of this company in responsible charge of the development of the project, from inception, are H. E. Myers, C. M. McConaghy and the writer.

Progress Against Housing Discrimination

DESPITE some setbacks, America has made more headway in the last few years in the fight against racial discrimination than any other country in the world with a minority problem.

This fact was stressed by Charles Abrams, housing expert and author of "The Future of Housing," at the recent conference in Buffalo of the New York State Committee on Discrimination in Housing.

Important demonstrations of inter-racial living have been achieved in New York, Seattle, and Los Angeles [said Mr. Abrams]. Some of these demonstrations are in private housing developments. The Supreme Court decisions in the restrictive covenant cases and the report of the President's Committee on Civil Rights have been landmarks. These have been followed by laws in various communities banning racial discrimination and segregation in publicly assisted housing.

The fight is far from won, but we have made a start. Winning the fight is a vital part of winning the struggle in Asia and throughout the world, where the racial issue has become one of the great propaganda missiles.

J. Clarence Davies, New York realtor, calling upon his own experience, observed that "mixed neighborhoods have proved as easy to maintain, as easy to manage, and more desirable from the standpoint of market flexibility than segregated areas." He also found that the trend of commercial rental values was independent of the race factor—it fared similarly in mixed and segregated areas.

A blueprint for 1951 for the State Committee and its cooperating organizations was charted by Ira S. Robbins, Executive Vice-President of the Citizens' Housing and Planning Council of New York. He advocated a five-point program and asserted that the approach to the problem of discrimination in privately owned housing must be different from that in publicly aided projects. As to private housing, he said that the first step should be the establishment of a legislative commission to study the causes, extent, and effects of discrimination in the sale, rental, and financing of housing and recommend methods to remedy the situation. "Such a law would provide the basis for a sound educational program that will destroy some of the myths that are now used to justify segregation," he said.

Among the other points recommended by Mr. Robbins were the employment of racial-relations advisors for the staff of the State Commissioner of Housing and in-service training courses for the staff of local housing authorities.

Herman T. Stichman, New York State Housing Comissioner, reaffirmed his faith in the non-discrimination laws of New York and his determination to guide local communities in the planning of successful inter-racial public housing.

Information regarding the program and activities of the New York State Committee on Discrimination in Housing may be secured from its office at 35 West 32nd St., New York.

First Aid Training for Civil Defense

THE group shown above receiving first-aid instruction is typical of many being conducted under Red Cross auspices. A quickening of interest is resulting from the distribution to Red Cross chapters of several million copies of Civil Defense Supplements to the standard textbooks on First Aid and Red Cross Home Nursing. Among the first groups at which the training is aimed are school children, industrial workers, police, firemen, and government workers. The new material was prepared in cooperation with the Federal Civil Defense Administration.*

* *Civil Defense Supplement to the American Red Cross First Aid Textbook*, 48 pp., and *Red Cross Home Nursing Civil Defense Supplement*, 10 pp. Available from local Red Cross Chapters or The American National Red Cross, Washington, D. C.

Urbanized Areas In the United States

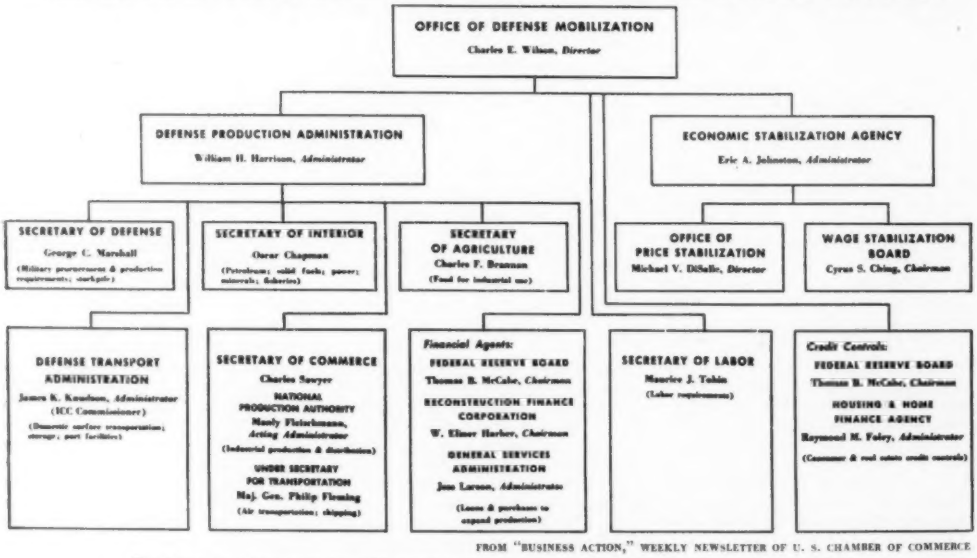
THE many problems created for municipal officials by the rapid growth of suburban areas adjacent to central cities become clearly evident in the new Census Bureau data defining urbanized areas and containing information on the amount and percentage of population inside the central city or cities and the population outside the central city or cities. The adjoining table is reproduced from the Census Bureau report dated February 1, 1951, Series PC-3, No. 9.

The "urbanized areas" term was used for the first time in the 1950 Census, and it supersedes the former designation of "metropolitan areas." The major objective was to provide a better separation of urban and rural population in the vicinity of the larger cities. In general, the effect of the adoption of the urbanized area concept, the Census Bureau explains, is to include in the urban population many persons who, under the 1940 rules, would have been considered as rural population.

An urbanized area consists of one or more cities of 50,000 or greater population, and all the near-by closely settled suburban territory or urban fringe. The table shows that the proportion of the population residing in the central city or cities varies greatly between areas, ranging from a low of 28.3% for the Wilkes-Barre, Pa., urbanized area to a high of virtually 100% for the Beaumont, Texas, urbanized area.

One-quarter of the population of the United States is concentrated in 12 urbanized areas of 1,000,000 inhabitants or more, with a combined population of 37,595,460.

DEFENSE MOBILIZATION ORGANIZATION



FROM "BUSINESS ACTION," WEEKLY NEWSLETTER OF U. S. CHAMBER OF COMMERCE

Decisions by these agencies will greatly affect municipal activities in the months ahead.

POPULATION OF URBANIZED AREAS: APRIL 1, 1950

Urbanized area	Preliminary count, 1950[1]			Percent of population inside central city or cities
	Total	Inside central city or cities	Outside central city or cities	
Total, 157 urbanized areas	68,787,978	47,988,213	20,799,765	69.8
Akron, Ohio	365,180	273,189	91,941	74.8
Albany-Troy, N. Y.	290,209	206,041	84,168	71.0
Allentown-Bethlehem, Pa.	225,155	172,260	52,895	76.5
Altoona, Pa.	86,249	76,844	9,405	89.1
Amarillo, Texas	73,935	73,737	198	99.7
Asheville, N. C.	57,658	52,208	5,450	90.5
Atlanta, Ga.	502,204	327,090	175,114	65.1
Atlantic City, N. J.	106,325	61,642	43,684	58.5
Augusta, Ga.	87,823	71,507	16,316	81.4
Austin, Texas	135,465	131,964	3,501	97.4
Baltimore, Md.	1,151,080	940,805	210,845	81.7
Baton Rouge, La.	137,108	123,957	13,151	90.4
Beaumont, Texas	93,746	93,715	31	100.0
Binghamton, N. Y.	144,570	81,132	63,438	56.1
Birmingham, Ala.	438,726	298,720	140,006	68.1
Boston, Mass.	2,218,893	790,863	1,428,030	35.6
Bridgeport, Conn.	237,954	159,352	78,602	67.0
Brockton, Mass.	93,086	62,856	29,230	68.2
Buffalo, N. Y.	794,747	577,393	217,354	72.7
Canton, Ohio	173,215	116,312	56,903	67.1
Cedar Rapids, Iowa	77,990	72,149	5,841	92.5
Charleston, S. C.	116,441	68,243	48,198	58.6
Charleston, W. Va.	130,122	72,816	57,306	56.0
Charlotte, N. C.	140,085	133,219	6,866	95.1
Chattanooga, Tenn.	167,031	130,333	36,698	78.0
Chicago, Ill.	4,902,801	3,606,436	1,296,365	73.6
Cincinnati, Ohio	808,021	500,510	307,511	61.9
Cleveland, Ohio	1,372,274	905,536	466,538	66.0
Columbia, S. C.	119,747	85,949	33,798	71.8
Columbus, Ga.	116,122	79,510	36,612	67.3
Columbus, Ohio	436,257	374,770	61,487	85.9
Corpus Christi, Texas	122,354	108,053	14,301	88.3
Dallas, Texas	536,864	432,927	103,937	80.6
Davenport, Iowa-Rock Island-Moline, Ill.	198,733	159,580	34,203	82.3
Dayton, Ohio	343,761	243,108	100,673	70.7
Decatur, Ill.	75,148	67,801	7,347	90.2
Denver, Colo.	493,513	412,856	82,657	83.3
Des Moines, Iowa	198,898	176,954	21,938	89.0
Detroit, Mich.	2,644,476	1,838,517	805,959	69.5
Duluth, Minn.-Superior, Wis.	142,344	139,157	3,187	97.8
Durham, N. C.	72,369	70,307	2,062	97.2
El Paso, Texas	136,430	130,003	6,427	95.3
Erie, Pa.	151,282	130,125	21,157	86.0
Evansville, Ind.	133,200	109,869	23,331	82.5
Fall River, Mass.	117,881	111,759	6,122	94.8
Flint, Mich.	197,151	162,800	34,351	82.6
Fort Smith, Ark.	55,947	47,864	8,083	85.6
Fort Wayne, Ind.	139,329	132,840	6,489	95.2
Fort Worth, Texas	313,872	277,047	36,825	88.3
Fresno, Calif.	129,275	90,618	38,657	70.1
Galveston, Texas	71,000	65,898	5,102	92.8
Grand Rapids, Mich.	225,427	175,647	49,780	77.9
Greensboro, N. C.	82,719	73,703	9,016	89.1
Hamilton, Ohio	63,021	57,717	5,304	91.6
Harrisburg, Pa.	168,933	89,091	79,842	52.7
Hartford, Conn.	299,676	177,073	122,603	59.1
Houston, Texas	497,287	594,321	102,966	85.2
Huntington, W. Va.-Ashland, Ky.	156,136	117,388	38,748	75.2
Indianapolis, Ind.	499,799	424,683	75,116	85.0
Jackson, Miss.	99,677	97,674	2,003	98.0
Jacksonville, Fla.	241,579	203,404	38,175	84.2
Johnstown, Pa.	92,780	62,723	30,057	67.6
Kalamazoo, Mich.	82,859	57,326	25,533	69.2
Kansas City, Mo.	689,350	453,290	236,060	65.8
Knoxville, Tenn.	148,174	124,183	23,991	83.8
Lancaster, Pa.	76,087	63,601	12,486	83.6
Lansing, Mich.	133,625	91,694	41,931	68.6
Lawrence, Mass.	111,937	80,427	31,510	71.9
Lincoln, Nebr.	98,048	97,423	625	99.4
Little Rock-North Little Rock, Ark.	150,758	143,529	7,229	95.2
Los Angeles, Calif.	3,970,595	1,957,698	2,012,903	49.3
Louisville, Ky.	470,394	367,359	103,035	78.1
Lowell, Mass.	105,783	96,523	9,260	91.2
Macon, Ga.	93,305	70,106	23,199	75.1
Madison, Wis.	109,377	95,594	13,983	87.2
Manchester, N. H.	84,768	82,581	2,187	97.4
Memphis, Tenn.	404,033	394,012	10,021	97.5
Miami, Fla.	453,004	246,983	206,021	54.5
Milwaukee, Wis.	823,430	632,651	190,779	76.8
Minneapolis-St. Paul, Minn.	977,931	826,751	151,180	84.5
Mobile, Ala.	180,892	127,151	53,741	70.3
Montgomery, Ala.	106,034	103,098	2,936	97.3
Muskegon, Mich.	84,775	46,047	38,728	54.7
Nashville, Tenn.	257,896	173,359	84,539	67.2
New Bedford, Mass.	125,354	109,033	16,321	87.0
New Britain-Bristol, Conn.	122,618	109,536	13,082	89.3
New Haven, Conn.	242,589	163,344	79,245	67.3
New Orleans, La.	655,682	567,257	88,565	86.5
New York-Northeastern N. J.	12,222,963	8,573,409	3,649,560	70.1
Niagara Falls, N. Y.	97,648	90,875	6,773	93.1
Norfolk-Portsmouth, Va.	351,342	259,895	91,447	74.0
Oklahoma City, Okla.	273,424	242,450	30,974	88.7
Omaha, Nebr.	306,291	247,408	58,883	80.8
Orlando, Fla.	72,572	51,826	20,746	71.4
Peoria, Ill.	154,084	111,523	42,561	72.4
Philadelphia, Pa.	2,913,516	2,064,794	848,722	70.9
Phoenix, Ariz.	214,335	105,442	108,893	49.2
Pittsburgh, Pa.	1,525,966	673,763	852,203	44.2
Pontiac, Mich.	91,799	73,112	18,687	79.6
Port Arthur, Texas	81,763	57,377	24,386	70.2
Portland, Maine	112,659	76,936	35,723	68.3
Portland, Oreg.	509,180	371,011	138,109	72.9
Providence, R. I.	681,607	247,700	333,907	42.6
Pueblo, Colo.	93,102	83,561	9,541	86.9
Racine, Wis.	98,101	90,749	5,352	93.0
Raleigh, N. C.	68,190	65,123	3,067	95.5
Reading, Pa.	154,571	109,062	45,509	70.6
Richmond, Va.	257,423	229,906	27,517	89.3
Roanoke, Va.	105,883	91,089	14,794	86.0
Rochester, N. Y.	406,929	331,252	75,671	81.4
Rockford, Ill.	121,723	92,503	29,220	76.0
Sacramento, Calif.	210,081	135,761	74,320	64.6
Saginaw, Mich.	105,358	92,352	13,006	87.7
St. Joseph, Mo.	79,280	75,572	3,708	95.3
St. Louis, Mo.	1,394,051	852,623	541,428	61.2
St. Petersburg, Fla.	113,378	95,712	17,666	84.4
Salt Lake City, Utah	226,880	181,718	45,162	80.1
San Antonio, Texas	447,365	406,811	40,554	90.9
San Bernardino, Calif.	135,394	62,793	72,608	46.4
San Diego, Calif.	413,274	321,465	91,789	77.8
San Francisco-Oakland, Calif.	1,997,303	1,141,329	855,974	57.1
San Jose, Calif.	175,983	95,044	80,939	54.0
Savannah, Ga.	128,190	119,689	8,501	93.4
Schenectady, N. Y.	123,579	92,070	31,509	74.5
Scranton, Pa.	235,122	124,747	110,375	53.1
Seattle, Wash.	618,047	462,440	155,607	75.1
Shreveport, La.	148,296	125,426	22,870	84.6
Sioux City, Iowa	90,144	84,035	6,109	93.2
South Bend, Ind.	187,879	115,698	52,181	69.0
Spokane, Wash.	174,853	160,484	14,369	91.8
Springfield, Ill.	96,649	80,832	15,817	83.6
Springfield, Mo.	75,117	66,302	8,815	88.3
Springfield, Ohio	81,837	78,029	3,808	95.3
Springfield-Holyoke, Mass.	356,471	217,041	139,429	60.9
Stamford-Norwalk, Conn.	172,197	123,042	49,155	71.5
Stockton, Calif.	113,362	71,660	41,702	63.2
Syracuse, N. Y.	264,610	220,067	44,543	83.2
Tacoma, Wash.	166,910	142,973	23,935	85.7
Tampa, Fla.	170,396	124,073	54,323	69.5
Terre Haute, Ind.	77,845	64,047	13,798	82.3
Toledo, Ohio	361,493	301,358	60,135	83.4
Topeka, Kans.	88,100	77,827	10,273	88.3
Trenton, N. J.	189,276	127,867	61,409	67.6
Tulsa, Okla.	303,960	180,566	23,382	88.5
Utica, N. Y.	117,390	101,479	15,911	86.4
Waco, Texas	92,299	84,300	7,999	91.3
Washington, D. C.	1,861,572	797,670	463,902	62.2
Waterbury, Conn.	131,442	104,142	27,300	79.2
Waterloo, Iowa	63,551	44,354	19,197	77.0
Wheeling, W. Va.	106,151	58,447	47,704	55.1
Wichita, Kans.	192,009	166,306	25,703	86.6
Wilkes-Barre, Pa.	270,978	76,638	194,340	28.3
Wilmington, Del.	184,265	109,907	76,358	59.0
Winston-Salem, N. C.	91,493	84,816	6,677	94.9
Worcester, Mass.	217,703	201,865	15,838	92.7
York, Pa.	78,495	59,704	18,791	76.1
Youngstown, Ohio	297,064	167,643	129,441	56.4

[1] Preliminary population counts exclude crews of American vessels in ports of the United States and persons enumerated away from home, who have not yet been credited to their specific usual place of residence. For the United States as a whole, there were 841,769 such persons, but the exact number of these who reside in each of the areas shown in this table has not yet been determined.

SOME EFFECTS OF

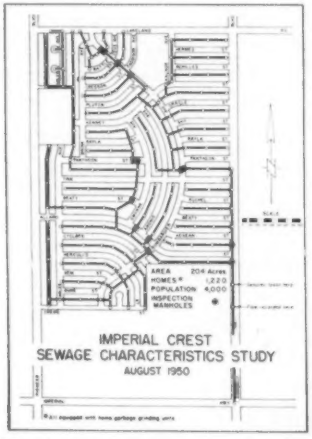
Home Garbage Grinding

UPON DOMESTIC SEWAGE

By A M RAWN
Chief Engineer and General Manager
County Sanitation Districts
Los Angeles County, Calif.

IN THE preparation of a report on the collection and disposal of refuse in the Sanitation Districts of Los Angeles County, the necessity developed for a reasonably accurate appraisal of the effect of ground garbage upon the strength and other characteristics of sewage. To this end, the districts examined sewage flowing from the Imperial Crest housing project, a new development completed a little over eight months ago. It comprises 1,220 homes, all occupied, on 204 acres and a total population of 4,000 (Figure 1). Each home is equipped with a garbage grinder. There is no collection of garbage in the 204-acre tract.

The housing project was sold out as fast as the houses were completed. Since the garbage grinders were installed when the homes were constructed, no opportunity was afforded to make a direct comparison in the area of the characteristics of ground garbage mixed into the sewage with similar characteristics of sewage *sans* garbage. However, by reducing the dissolved and suspended components discovered in the mixed waste to pounds per capita per day, eliminating from consideration the volume of the sewage, comparison could be made with residential sewage where garbage grinders were not in use. Thus, comparison shows that the two sewages—one with and the other without ground garbage—are, between two wholly residential areas, similar in substantially all characteristics except the admixture of the garbage slurry.



This is the sewerage system for the Imperial Crest housing development.

General Estimate

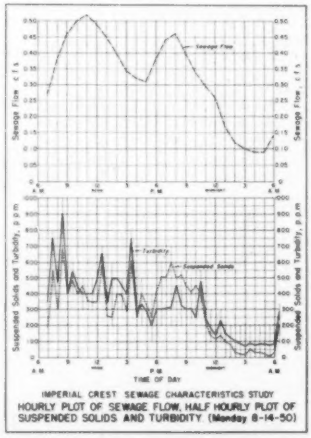
The reader may make his own comparison of other areas of which he has knowledge with the assurance that the characteristics of the sewage with the ground-garbage slurry added are accurately determined. He also should bear in mind that there is a marked difference between residential sewage, municipal sewage, and combined domestic sewage and industrial waste, such as might be found in a metropolitan area devoted in considerable measure to industrial pursuits.

Measurement of the sewage characteristics in pounds per capita per day probably affords the best criteria of comparison. As an illustration, to make the analysis on the basis of parts per million, the residential sewage would be analyzed on a basis of a little over 50 gallons per capita per day. In the sanitation districts' metropolitan area the over-all flow of domestic and industrial wastes equals 80 to 85 gallons per capita per day from a connected population of about 1,500,000. The significance of this difference, the quantity and characteristics, is that, percentagewise, the effect of ground garbage upon combined domestic and industrial flow is much less than upon residential sewage alone. However, knowing the source of both the sewage and the ground garbage, and having reduced the effect of garbage upon the sewage characteristics to pounds per capita per day, the effect of garbage slurry from homes upon any type of flow may be computed with a fair degree of accuracy.

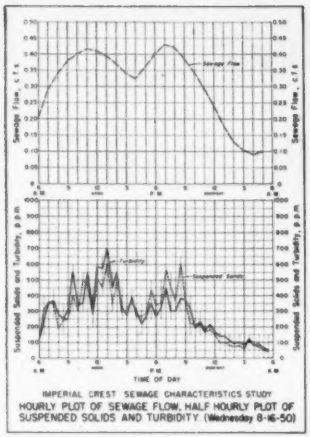
The Imperial Crest housing development was completed in March 1949, and as noted, home garbage grinders were installed in each home. The average sales price per home, including lot and all other facilities of development, was $7,500. About half of the homes have two bedrooms and the other half, three. Of the purchasers, 95% are veterans of World War II. An inspection of 78 homes selected at random indicated that 40% of the total are equipped with automatic clothes-washing machines and over 50% with serviced home water-softening units. The entire system of laterals and interceptors within the tract converges at one point for discharge into the districts' interceptor. The point of sampling was at this convergence.

Districts' Studies

The districts' studies of the sewage of the area, as well as the condition of the sewers after about six months of use, were made over a 24-hour period on Monday, August 14, 1950, and again on Wednesday, August 16, 1950. During the test periods and for a total period of three weeks the flow was continuously gauged by means of a 90-degree, V-notch weir. Composite samples were collected by obtaining weighted grab samples each 30 minutes


Sewage Flow, c.f.s.
Suspended Solids and Turbidity, p.p.m.
Turbidity
Suspended Solids
TIME OF DAY
IMPERIAL CREST SEWAGE CHARACTERISTICS STUDY
HOURLY PLOT OF SEWAGE FLOW, HALF HOURLY PLOT OF SUSPENDED SOLIDS AND TURBIDITY (Monday 8-14-50)

Characteristics of Monday flow: suspended solids, turbidity, and quantity.


IMPERIAL CREST SEWAGE CHARACTERISTICS STUDY
HOURLY PLOT OF SEWAGE FLOW, HALF HOURLY PLOT OF SUSPENDED SOLIDS AND TURBIDITY (Wednesday 8-16-50)
TIME OF DAY

Characteristics of Wednesday flow: suspended solids, turbidity, quantity.

during the two 24-hour periods. Tests of the grab samples were made in the field to determine settleable solids, soluble sulfides, pH, and temperature, and at the laboratory to determine turbidity and suspended solids. Composite samples were analyzed at the laboratory to determine these same constituents as well as the BOD, grease content, and other pertinent factors.

The average flow on Monday was 52.3 gallons per capita per day, while that on Wednesday was 48.6. The average flow for the three-week period was 48.7. The greater per capita flow on Monday is due to the wash load which increased the typical morning peak by approximately 20%.

Concentration of organic constituents in the composite sewage samples are shown in Table 1. Table 2 presents these same data in terms of pounds of constituents per capita per day. Table 3 indicates the daily per capita loadings for strictly residential sewage in a neighboring city, as heretofore described; while Table 4 is a comparison of Table 2 and Table 3 in which, for the comparative flow without garbage added, one-third of the BOD is assumed to be in the filtrate.

Inspection Made

An inspection of the sewers was made during the flow investigation. The sewers are of vitrified clay from 8 to 15 inches in diameter. Slopes in the larger sewers are quite adequate. However, much of the 8-inch pipe is laid on a slope of .24%, producing a velocity of about 1½ feet per second in the 8-inch pipe when flowing half full.

The sewers were built by the subdivider and were not carefully constructed. A number of obstructions were observed resulting from extruded mortar fins at the joints, behind which settleable material tended to lodge temporarily during low flow. This lodging also occurred in the hand-troweled inverts of the manholes which were not sufficiently smoothed.

Such deposits, accumulating during periods of low flow, gave evidence of developing septicity as indicated by occasional sulfide content in what should otherwise be sulfide-free sewage. At higher flows the deposits were washed out and sulfide production stopped. It is altogether likely that most, if not all, instances of stagnation of the garbage-sewage mixture could have been avoided if more care had been exercised during the sewer construction.

TABLE I

CHARACTERISTICS OF COMPOSITED SEWAGE SAMPLES FROM IMPERIAL CREST HOUSING PROJECT

	Concentration		
Constituent	*Mon. 8/14/50*	*Wed. 8/16/50*	*Average*
Turbidity (ppm)	320	340	...
Suspended solids (ppm)	400	353	380
Settleable solids (ml/l)	10	9	...
Total solids (ppm)	1,600	1,780	...
Grease: Total (ppm)	121	108	115
Floatable (ppm)	4.9	4.2	...
BOD (5 day, 20° C): Total (ppm)	400	376	390
BOD (5 day, 20° C): Filtrate (ppm)	145	140	142

TABLE II

CHARACTERISTICS OF IMPERIAL CREST SEWAGE IN TERMS OF DAILY PER CAPITA LOADINGS

	Daily Per Capita Contributions		
Constituent	*Mon. 8/14/50*	*Wed. 8/16/50*	*Average*
Suspended solids (lbs.)	.174	.143	.154
BOD, Total (lbs.)	.174	.152	.158
BOD, filtrate (lbs.)	.063	.057	.058
Grease, Total (lbs.)	.053	.044	.047
Sewage flow (gal.)	52.3	48.6	48.7

TABLE III

AVERAGE PER CAPITA LOADINGS FOR DOMESTIC SEWAGE OF NEIGHBORING CITY

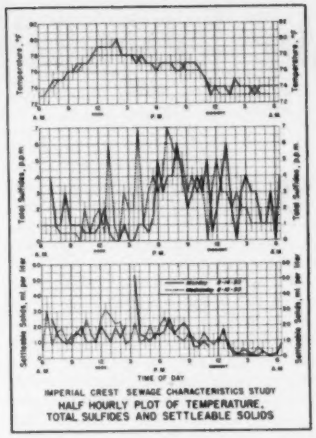
	Daily Per Capita Contributions		Weekly Average
Constituent	*Mon.*	*Wed.*	
Suspended solids (lbs.)	.128	.105	.107
BOD, Total (lbs.)	.127	.098	.104
Grease (lbs.)	.028	.016	.019
Sewage flow (gal.)	48.5	42.5	43.9

TABLE IV

ESTIMATED INCREASES IN LOADING DUE TO GROUND GARBAGE

Constituent	*Aver. Daily Per Capita Increase*	*Average Percentage Increase*
Suspended solids	.047 (lbs.)	44%
BOD, Total	.054 (lbs.)	52%
Filtrate *	.023 (lbs.)	66%
Suspended	.031 (lbs.)	45%
Grease, Total	.028 (lbs.)	147%

* One-third of BOD assumed to be in filtrate.


IMPERIAL CREST SEWAGE CHARACTERISTICS STUDY
HALF HOURLY PLOT OF TEMPERATURE, TOTAL SULFIDES AND SETTLEABLE SOLIDS
TIME OF DAY

Characteristics of flow: settleable solids, soluble sulfides, temperature.

Poorly Constructed for Ground Garbage-Sewage Mixtures

In evaluating the effect of introducing ground garbage into sewers, it should be observed that the sewers at Imperial Crest are largely constructed on minimum-velocity design basis and are probably as poorly suited to the transportation of ground garbage-sewage mixtures as could be encountered. The depositions observed in the sewers may be described as significant but not serious. They differ from those occurring in sewers not carrying garbage in two particulars: (1) deposits of garbage materials, principally egg shells, accumulate at points where self-scouring velocities are lacking, as at low spots or minor obstructions; (2) incrustations of grease were observed in appreciable amounts, particularly in the manholes and on the sewer walls at or above the flow line, rendering it apparent that the accumulation of grease is more rapid with sewage flows augmented by garbage slurry, than with those without garbage. However, these data are not sufficiently complete to be conclusive.

The research work herein described was accomplished by Ludwig Brothers, engineers, of Pasadena, Calif. The districts' representative on the work was Francis R. Bowerman, Sanitary Engineer.

Are Indoor-Outdoor Swimming Pools Practicable?

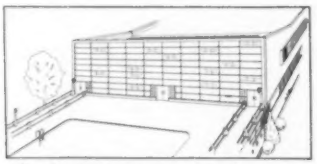
WHY CAN'T we enclose our pool and use it all year round?" This article will aim to suggest practical answers to that oft-repeated question.

But first, it makes considerable difference whether one is talking about small cities where one pool will serve the community, or large cities requiring two or more pools; and second, whether one is talking about cold or warm climates. Obviously, the same principles do not apply in all cases, but in general, the suggestions brought out in this article apply.

Now *why* should there be this question? It revolves around the fact that in most cities an outdoor swimming pool has its use through the three or four warm summer months only—or maybe six months, at the most, in the warmer climates. And so, "Why not build an enclosed pool and use it the year around?" That sounds reasonable—why not?

Use and *costs* are the reasons. Let's examine *use*. When the weather is hot, your pool will have maximum use; and if cool, people stay away in droves. And so, if people don't use the pool when it is cool in the summer, why expect them to use it when cold, i.e., 50 above or 5 below or so? They don't. They go sledding, or skiing, or skating, or bowling, or dancing instead.

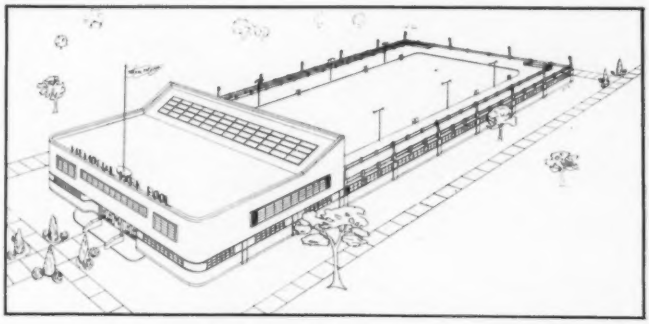
So, for the same number of people, a pool large enough to take care of the summer crowds would be almost deserted at times, and never over one-fourth full, in the wintertime; while a pool built for winter use would be entirely inadequate for summer and would be sure to create dissatisfaction.



1. Southern-exposure window wall.

Construction and Operation Costs

And how about construction costs? For an enclosed pool, construction costs are easily doubled with superstructure, tile, heating, ventilating, etc. Such a pool, 42 by 75 feet, with two walls opening up with double doors, spaced 3 feet apart to keep down condensation, and with no removable roof, cost a large city $400,000, in 1950. But, do you double the use? Attendance figures indicate that youll have no more, and probably less, pool patronage in the combined fall, winter, and spring nine months than you'll have in the warm three summer months. You've doubled costs, but you haven't doubled average attendance.



2. Illustration of a proposed indoor-outdoor swimming pool.

By WESLEY BINTZ

Off-Season Problem

And how about operation costs? This really gets serious. Operation costs as well as building costs for the enclosed pool are double those of the outdoor pool, with the pool size remaining constant. Consider that you have to heat the building, ventilate it, heat the water, and man the pool—i.e., you must have a lifeguard on duty whether you have one patron or one hundred—and you do all this for three times as long as you do for summer use. It really means that to provide that swim in the winter, compared to the summer swim, it costs you just about—well, let's see: *double* cost and *double* operating expenses for *three* times as long but you have about *one-tenth* as many people (that's generous) using the pool. You get $2+(2\times3)\times10$, or 80 times as much per person for man-use cost. Let's be conservative and call it 50 times as much. Is it worth it? Got the money?

There are other reasons for not making an indoor pool out of your outdoor pool. The indoor pool is most generally built in connection with a gymnasium, high school, YMCA, or the like. We'll even go further and say that any high school built today, or already built, without an indoor swimming pool is out of date.

The *outdoor* pool is almost always built as a recreational feature and it is recommended that it be built in connection with an extensive play area for adults and children. The public toilets are available for the park patrons, and if baseball and football and other strenuous games are included in the play area, the facilities are available to the swimmers before and after the swimming season.

Now, some people's answer to the indoor-outdoor pool is a single pool with sides which open by one scheme or another. Well, believe it or not, that is still an indoor pool. It is no more an outdoor pool, when opened up, than a hard-top convertible automobile is a convertible automobile; it is still only a two-door sedan, although it may have some of the looks of a convertible. Take your choice. There is only way of making one pool actually an indoor-outdoor swimming pool, and that is by rolling back the roof. Well, it can be done. Sure, it can!

The Practical Answer

And so, you ask, "What are we going to do?; we must have year-round usage." Well, there is a practical answer: A two-unit project with one operating unit or bath-house.

And so, let's take a look at the sketches. Figure 4 shows the layout of a combination or dual pool set up—an indoor pool and an outdoor pool in a "Bintz Pool" design and layout (as represented by Patent No. 1,572,463), i.e., a combination swimming pool and bath-house built as one coordinated unit, in which two sides of the pool become two sides of the bathroom. You'll note the entrance with lobby; the counter, and

shelving to serve the bathers; the offices, the first-aid room; the concession stand, lounge, and confectionery space; the public toilets, and other conveniences, as well as the stairways to the pools above.

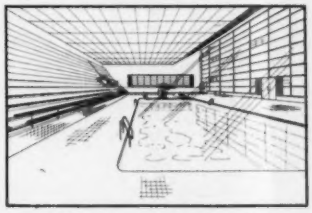
To continue with this layout, follow around the pools, and under the concourse floor (or deck around the pools) you'll find well-positioned and complete bathroom convenience for the use of both pools. Twenty-seven years of experience will take care of the details. The filter plant, between the two pools, serves both of them. Space for heating and ventilating systems is there, plus other special rooms for this and that. See the special play rooms in rear. Note that the major part of the bathroom area can be shut off when the large outdoor pool is not in use, or during slack periods on cool summer days. This cuts down on operating costs.

Obviously, this "Bintz Pool" arrangement can all be put into a single building, and the pools designed as sunken pools, but this would cost about one-fourth more to accomplish, and doesn't work out as well in operation or usage. But, the point is, you don't have to use the "Bintz Pool" layout to accomplish this desirable result.

Sketch No. 2, a perspective, shows how the combined indoor-outdoor pool is worked out architecturally, and what a really nice-looking project you can get out of this combination, especially if you don't spoil it with wire fences, which would be required around an outdoor sunken pool. This would make a beautiful functional memorial, wouldn't it?

Flexibility of Design

Sketch No. 3 shows a standard indoor pool, 100% swimmable, 100% divable for summer use; and 50% wadable, 50% diving area for use in winter. A grandstand that will seat 1,000 spectators for aquatic meets is provided. It doesn't need to be so large. It can be reduced to several rows of seats if desired. Playrooms, office, lobby, concession stand, etc., are under the grandstand. A spectator coming up from the floor below passes under the grandstand and emerges at either end of the indoor pool to enter the spectators' area around the outdoor pool—a unique arrangement. The pool is standard in all respects except that it is all deep water. Don't forget that in the summer time, it is strictly a diving pool. But to make it usable in the winter time for both wading and diving, we have arranged a floor, hydraulically



3. Indoor pool with a grandstand.

operated, which will lift up into place and provide 3 to 5 feet depth of water over half of the area. It can also be used thus on cool summer days. Why not?

One important thing to note in this sketch is the large southern exposure wall of ventilating windows. Skylights are provided in the roof. This provides an indoor pool with a maximum of outside lighting. In the summertime with windows open to the slant of the sun's rays, it is almost an outdoor pool.

Condensation in these large window areas is always a problem. We know of an indoor pool that has double outside walls, about 3 feet apart, to take care of this important and troublesome matter. In another case, in a so-called indoor-outdoor pool, built recently in a large city, two large sliding doors (two sides) are double doors, 3 feet apart, to take care of this condensation item. To meet this problem we have developed a unique arrangement in our glass wall. It is a system of ducts to blow warm air onto the window with other closely allied cold-air ducts to take in the cold air from the windows, so it cannot settle down to the floor and cause a highly undesirable situation.

Sketch No. 1 again shows the same window wall, from the outdoor pool side, with its expansive daylighting provisions for this practical indoor-outdoor pool arrangement.

Now, we have an indoor-outdoor swimming-pool arrangement, without the disadvantages of the one-pool set-up, and with all of the advantages of the single outdoor and indoor pool, each arranged for its own particular use.

Sizes and Costs

As to sizes, these pools have been drawn up to show a standard 50-meter length (164-foot) outdoor pool, with a 75-foot width, depths 3 feet to 5 feet, 100% wadable and 100% swimmable, with capacity of about 3,600 swimmers per day. The indoor pool is 45 by 75 feet, which is the standard 25-yard indoor pool. It has a capacity as a deep pool for summer use of about 110 at one time, or 335 a day, and as a combination 50% deep and 50% shallow pool of 225 swimmers at one time, or 675 daily. Of course, the dimensions can be larger or smaller.

The approximate cost of the project as outlined would be about as follows:

For the outside 50-meter length "Bintz Pool," including a proper front, filters, and complete and fully equipped bathroom and pool, cost would be $255,000.

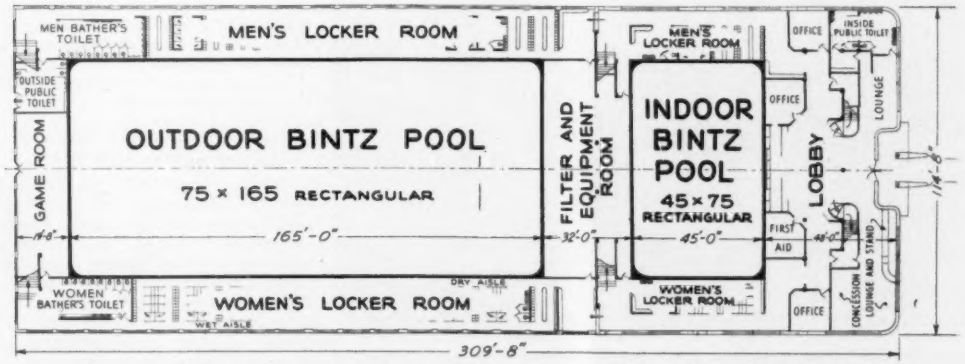
For a sunken pool and bathhouse of equal size, permanence, and detail, cost will be at least $340,000.

The building as shown, 105 by 115 by 33 feet, with 398,475 cubic feet, including extra indoor pool costs and all equipment pertaining thereto, at 80c per cubic foot, would be about $320,000.

Therefore, total cost for this dual indoor-outdoor swimming pool project—economical, well-arranged, and usable all seasons of the year—would be about $575,000.

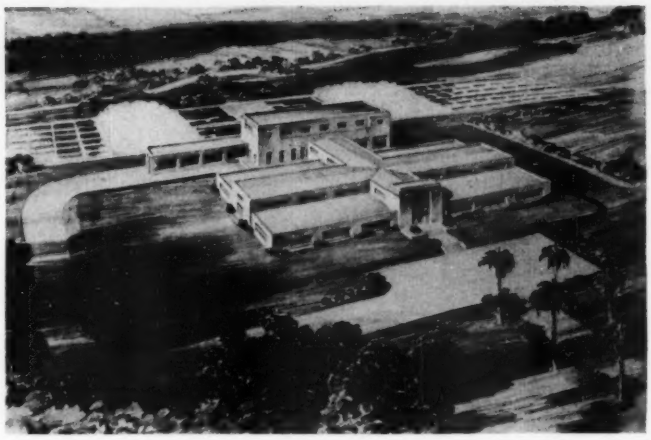
A large building will be required if the "Bintz Pool" idea is not used, and increase cost by one-fourth.

This is our solution of the problem posed by the increasing activities facing many park and recreation departments, and is our answer to the question posed at the beginning of this article—Got the money?



4. Plan of an indoor-outdoor pool, patented and sketches copyrighted by Wesley Bintz, Lansing, Mich.

This drawing shows how the Loiza 30-mgd filtration plant will look when the landscaping has been completed. Note the covered wash-water tank at right.



New 30-mgd Loiza filtration project is one of the finest built in recent years, shows how health and sanitation progress is being made there through local enterprise and organization

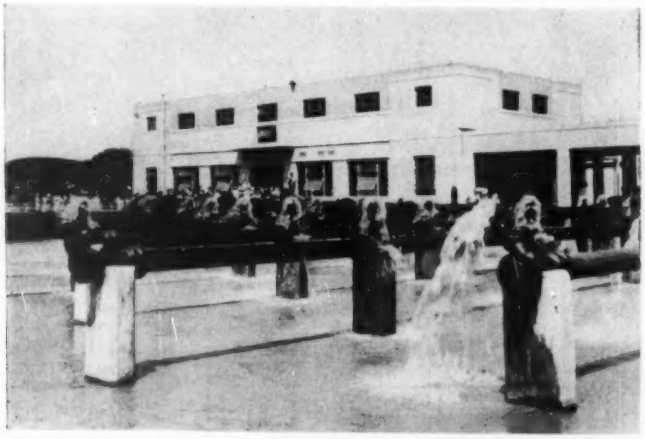
Loiza Water Filter Plant Typifies Puerto Rico Today

WATER supply and sewerage in Puerto Rico represent the logical development of a public service under a democratic system of government. It is a well-known principle that if a service is needed and private enterprise cannot supply it, then the local government must, and that if the local government is also unable to cope with the problem, then the state must assume the responsibility.

Puerto Rico, one of the United States' insular possessions, has for the past several years been in the process of an "operation bootstraps" designed to lift the standard of living of the island's 2,200,000 people through their own efforts. The results of this program, under the direction of Governor Luis Munoz Marin, who was the island's first elected governor, has resulted in many fine slum-clearance projects, housing developments, and new industries, as well as a much sounder water and sewerage program for the area.

Prior to establishment of the water and sewer authority, the island's method of obtaining a water supply for public purposes was uncoordinated. A ridge of mountains goes down the length of the island, splitting it into fairly well-defined watersheds. The practice of each small community's tapping a portion of the watershed could lead only to confusion. This, plus the fact that proper technical help was not as easily available to the communities as it is on the mainland, made the problem even more difficult. As a result, the facilities were not well developed, they had poorly designed rate schedules, and their operation was not of the best.

It was in recognition of this fact that the insular government established its Aqueduct and Sewer Authority to take over and administer all the water and sewerage utilities on the island. The step was taken in 1945.



PHOTOS COURTESY HAMILTON WRIGHT

How the Loiza plant looks from across aeration system. This was taken during the plant dedication. The aerators were turned on as part of the ceremonies.

Aqueduct and Sewer Authority Staffed with Able Men

Governor Marin staffed the Authority with outstndingly able men. The Executive Director is Sergio Cuevas; Comptroller is M. Joseph Borst; Rafael Palmer is Chief Project Engineer; Felipe Bosch is Chief of Operations, and Mortimer Gibbons is Sanitary Engineer.

Mr. Cuevas is a former Chief Engineer of the Puerto Rico Irrigation Serv-

ice, and later, a Commissioner of the Interior for the government. Mr. Borst, a certified public accountant, has had a long record of responsible financial positions in private industry in Continental United States before becoming Comptroller. Mr. Palmer and Mr. Bosch have both held responsible engineering positions in Puerto Rico prior to their appointments. Mr. Gibbons has had long experience in the United States as a consulting sanitary chemist and as superintendent of the Rahway Water Department.

This new authority retained the services of Buck, Seifert and Jost, consulting engineers, of New York City, to study the system and make appropriate designs for improvements.

Distribution System

The distribution systems of the various water properties at the time the Authority took over comprised approximately 744 miles. This included 595 miles of cast-iron pipe, 15 miles of concrete-pressure pipe, and 134 miles of galvanized iron and steel pipe. Since acquisition, the Authority has installed 325 miles of various sizes and types of pipelines. Under contracts with two companies, 165 miles of cast-iron pipe were cleaned during 1946-1948. Also, water waste and leakage surveys have been made in the larger communities by the Pitometer Company. The surveys showed that in most of the systems the percentage of water unaccounted for compared favorably with those in the continental United States. As a result of the surveys, considerable waste was eliminated and a large number of clandestine water services were discovered, as well as defective meters and under-registration of certain large meters.

Although the Authority could not undertake any large-scale improvements immediately, it was able to coordinate the facilities to augment the quantity and improve the quality of the water.

All-Out Effort

But these were minor improvements. The Puerto Rican Government had no such cautious aims in mind when it set about to serve its densely populated island with adequate water. The first step along the way is the new Loiza dam and filtration plant that will ultimately provide 100 mgd to one system area alone. This project also was one of the assignments of Buck, Seifert and Jost, the Authority's consulting engineers. The contractor who built the improvement is Rexach and Rivera, Inc., of San Juan.

The dam will supply both power and water. Its design has been carefully engineered so that the two tasks will not interfere. From the water-supply standpoint, it can yield the ultimate of 100 mgd during a critical period. However, this will not be needed for many years, so until the demand for water does become that great, the water not used for public supplies, together with wet-weather flow, will be converted into power. As the demand for water increases, the use of the power-generating facilities will diminish, to be supplanted by other power facilities.

The dam uses tainter gates 30 feet high and 50 feet long, so that a more accurate control of the water level in the reservoir can be obtained. The upland area has many rich sugar-cane lands that these gates will protect from flood. The filter plant is designed for 60 mgd.

One of the most important steps was the construction of the present Loiza plant, able to treat 30 mgd. The design of the plant had to take into account the fact that the raw water being received had a high bacterial count, typical of any area where the population is dense and the land is intensely cultivated. Thus, the treatment has to be thorough.

First Treatment Phase

Actually, the dam supplies the first phase of the treatment. The water, in its highly turbid state of several thousand ppm of suspended matter, drops much of its turbidity at the headwaters of the reservoir. Although silting is expected, it will not interfere with the plant during the expected life of the structure.

In the plant itself, the water is first aerated to help oxidize taste and odor impurities. This was supplied as a precautionary measure to make certain that every facility would be available to treat a water containing, among other impurities, sugar-mill wastes. Aeration can be by-passed, if desired.

Following aeration, the plant will supply chlorination to a free residual to insure further control of taste and odor impurities and to eliminate all bacterial contamination. Five Wallace and Tiernan chlorinators are installed for service and standby, with space for a sixth provided. Four are 2,000-pound machines; the fifth is smaller.

The water then receives coagulating chemicals of alum and lime—the latter when needed. Activated carbon may be applied here as a further taste-control measure. Three Omega feeders for the alum, three for the lime, and two for the carbon have been installed. Space for added machines for each chemical is provided.

The water receives flocculating and mixing treatment in a Dorr rapid-mix flocculator. The rapid-mix chamber retains the water for 45 minutes at design flow before discharging the water to the settling basins.

There are four settling basins which hold the water for four hours before sending it on to the filters.

The filters are divided into 12 units, each able to handle 2½ mgd. Their design uses the conventional rate of 2 gallons per square foot per minute, rather than the higher rates in some recent plants. The engineers used the conventional rate in order to be absolutely sure of thorough filtration. The filters are equipped with fixed-nozzle, surface-wash equipment and Wheeler bottoms. Roberts control tables govern

As part of the dedication ceremony, Sergio Cuevas, Executive Director of the Aqueduct Authority, right, receives completed plans for the plant from George Buck, left, of Buck, Seifert and Jost, the Authority's consulting engineers.

the filter operation through the use of Simplex gauges and meters.

The filtered water is carried to a 10-mgd concrete reservoir just below the plant, from which it flows by gravity to the distribution system.

Wash water for the filter unit is stored in a rectangular concrete reservoir which has the added duty of acting as the supply reservoir for the immediate vicinity.

The Authority uses the metric system to calculate its bills. Not only water rates, but all calculations for the water plant are based on it rather than on English units—a policy that most engineers who are familiar with the work will agree would be a step forward if practiced generally in Continental United States. The rate schedule is as follows:

Cubic meters per two months	*Per cubic meter*
First 20 (or less)	$1.50
Next 180	0.07
Next 1,800	0.55
All in excess	0.04

Bills are subject to the following minimum charges per two months:

	Residential	*Commercial*
⅝-inch meter	$ 1.50	$ 2.34
¾-inch "	2.06	3.04
1-inch "	4.02	6.00
1½-inch "	8.08	12.00
2-inch "	12.00	18.10
3-inch "	25.00	38.00
4-inch "	40.00	60.00
6-inch "	.....	100.00
8-inch "	.....	180.00
Public fountains	25.00	.....

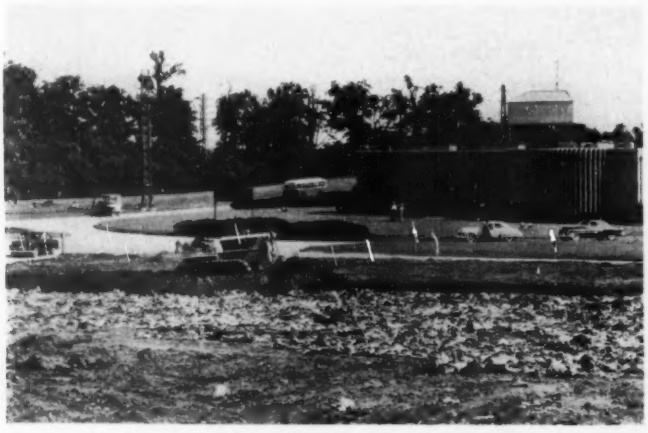
Certain flat rates have also been established by the Authority for a relatively small number of customers in those areas where meters are not yet in use. To establish its sewerage service on a sound basis, the Authority has imposed a sewer-service charge of one-third the water rate, collectable on the same bill.

The water rates are not excessive. Calculating a monthly usage of 3,000 gallons, the charge would be 84 cents per month. If the usage were 5,000 gallons, the monthly charge would be $1.38. If it were 10,000 gallons, it would be $2.70. The water bills were submitted monthly for many years prior to the Authority's taking over the system. The move to a 2-month billing reduced the cost of the overhead substantially and put it more nearly in line with practice of systems elsewhere.

Electric Power From the Garbage Dumps

By O. P. WILLIAMS
Commissioner of Public Works
Memphis, Tenn.

Every night, after refuse has been put in place on the site and compacted, the operators place an earth covering of 6 to 7 inches over the filled area.



A tractor spreads the two-foot cover over the compacted trash.

MEMPHIS was the gainer two ways. Blighted, worthless land is now beautifully landscaped and valuable—salable at a price of $12,500 to the Tennessee Valley Authority. Trash that the city previously sent to an untended dump was buried in a sanitary landfill.

The project actually was only an incident in the general program begun in 1947, substituting the landfill method of refuse disposal for the objectionable open dump in Memphis. Instituted under the leadership of O. P. Williams, Commissioner of Public Works, it meant an actual cash return to the city.

In 1947 the Real Estate Board gave the Department of Public Works permission to fill what seemed a worthless low area in the southwestern portion of the city. Since a cereal company and an attractively landscaped TVA power-transformer station were close by, Commissioner Williams decided on the landfill method, operated to avoid nuisances.

The city crews, working an 8-hour day, used 28 trucks to feed 16 tons of trash to the fill area. A Caterpillar diesel D8 tractor with an 8-foot dozer spread, packed, and covered about 70 cubic yards of cover material per hour. Two feet of clean earth topped off the backed garbage to complete the fill. As soon as the fill was completed, the Real Estate Board sold the property for $12,500 to TVA for expansion of its power-station area.

Memphis now operates three landfills at points within three miles of pick-up centers and well within the city limits. This, of course, utilizes short truck hauls and cuts operating and maintenance costs. The city also operates an incinerator, using it to dispose of refuse that is principally garbage from certain market areas where decay is rapid.

Municipal
Public
Relations

The City Tells Its Story

By HENRY DAVIS NADIG . .

Executive Director, Association of Municipal Public Relations Officers

Helpful Booklet on Annual Reports From U. of C. Institute of Public Service

YOU may think we talk a good deal about annual reports in this column. We do: annual reports continue to be one of the most important media of municipal public relations; their importance grows with the advances in presentation, appeal, human interest, and general excellence that is registered as continually improving reports come off the press.

As I have noted before, annual reports can be the springboard for development of activity in other media of MPR; they can be the focal point for pulling up interest in local government and for spreading intra-municipal-government *esprit de corps*.

The importance of the annual municipal report has not been overlooked by the Institute of Public Service of the University of Connecticut. Since 1945, the Institute, whose Director is Joseph M. Loughlin, has been sponsoring a Connecticut Town and City Annual Report Contest. Its purpose is to encourage municipal officials to inform citizens about local government and to increase citizen interest.

As a result of the contest, Mr. Loughlin reports, more and more local units of government have abandoned the stuffy, stodgy, purely statistical and tabular form of report and have taken to the production of more readable presentations. A look at the prize-winning reports in the 1950 contest would be worth while. Highest awards went to the Connecticut cities of Cornwall, Hebron, Salisbury, Plainfield, Greenwich, and New Haven as best in their groups.

What has prompted this particular column on annuals is the recent receipt from Mr. Loughlin of a 20-page 8½-by-11-inch booklet designed still further to stimulate publication in a modern manner of annual reports in the Nutmeg State. It should bring results.

"Tips on Town Reports" was prepared for the Institute by John E. Dever and Joan Davis, and they have done a good job of it. The booklet itself is representative of the type of publication that can be achieved by towns and cities without great expense but the application of initiative and the use of resources at hand.

Following a brief foreword by Mr. Loughlin, the booklet succinctly discusses "Your Town Report" on page 3 and concludes:

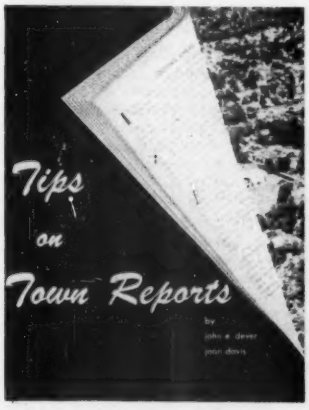
> It has been found that in order to be both vital and interesting, reports must contain current information in a popularized form. This implies two things: that all administrative reporting should be in terms that can be readily transformed for popular consumption, and that a definite procedure and schedule have been previously set up to complete the report as facts become available. Report planning should make provision for: where to get assistance, what the statutes say, finding the facts, a cover that attracts, presenting financial facts, featuring services, integrating school reports, interesting features.

The next 12 pages treat these eight topics graphically, with a minimum of text and copious illustration (in the tradition of modern municipal reporting!). All illustrations are taken directly from already published annual reports, many of which were prize winners in the Institute's annual contest.

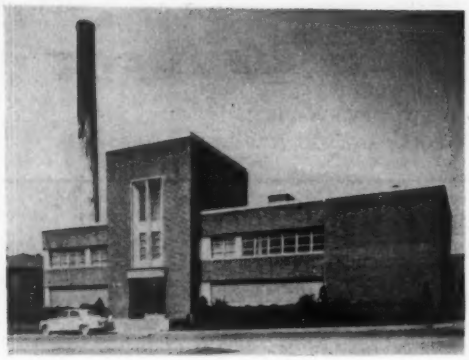
Details of the report contest are given on page 16, while award winners of 1945 through 1949 are cited on page 17. The booklet is an attractive two-color job—bright brown with black text on white coated stock. If you'd like a copy, send 50 cents to the Institute of Public Service, University of Connecticut, Storrs, Conn.

To Welcome New Citizens

One of the best ways to show new residents in your town or city that you, as a municipal government, do care about them and wish their cooperation is to send to them, promptly upon their arrival, a small leaflet or booklet—welcoming them to town. A number of cities do just this—one has just come from Milwaukee via Gerald P. Caffrey (AMPRO). Write to Mr. Caffrey, Municipal Reference Library, Milwaukee, if you want to see how nicely a piece of welcoming literature can be handled.



From the new booklet of the University of Connecticut's Institute of Public Service.



Capital budget recommendations for Dyersburg called for an increase in the water rates and the authorization of a $400,000 general-obligation school-bond issue to cope with the needs of an expanding population. The water plant is shown at the left; the attractive high school, above.

EFFECTIVE PUBLIC RELATIONS IN DYERSBURG, TENN.

Makes the Most of a Capital Budget

By **CHARLES L. CRANGLE**
Acting Director
Division of State Planning
Tennessee State Planning Commission

IN 1949, Dyersburg, Tenn. (1950 population, 10,865), had its problems, and they were similar to those of most American cities. Citizen demand for additional municipal services was ever-increasing, while the city receipts were showing no appreciable increases. The question was one of providing a number of additional services on a limited municipal budget. This was all-important if Dyersburg was to improve and grow.

The Dyersburg City Planning Commission, with the approval of the city administration, decided, in August 1949, to undertake a six-year municipal capital budget in order to evaluate the needs of the city in various fields and to canvass the possible financing of essential improvements. At the invitation of the City Planning Commission, representatives of the capital-budgeting staff of the Tennessee State Planning Commission were called upon to assist in the project. The original capital budget was the product of several months' work on the part of two TSPC staff members working with the eight-man local planning body.

The initial step taken was the collection of basic data regarding both the financial and public-works needs of the city. This material was obtained from city department heads by questionnaire. The questionnaire provided space for—among other data—a physical description of the project requested, its purpose, needs, estimates of the cost, possible revenues from the project, and suggested manner of construction. Two weeks were allowed for completion of the forms, and department heads, encouraged by the fact that city officials were interested in their ideas concerning long-term future needs, went to work immediately to fill out the questionnaires.

In the meantime, the technical staff worked with the City Recorder in preparing data on what public-works facilities the city had provided in the past 20 years, together with a record of the methods of financing employed. Further detailed information on the city's debt requirements during the future years, including principal and interest payments, was obtained, and estimates of future municipal operating expenditures and probable future revenues were prepared.

Obtaining Public Support

Shortly after the study got under way, at the same time that city department heads were working on the compilations of necessary improvements, and while the financial data were being gathered, a comprehensive public-information program was planned and carried out. The State Planning Comsion's technical staff felt strongly that equally important to the work of preparing the Dyersburg capital budget was the securing of citizen understanding and support for the project. It was recognized that unless such support was obtained, the capital budget would be simply another academic study, interesting to librarians, perhaps, but a dead letter as far as its actual use and continued application was concerned.

Six methods of acquainting the public with the capital-budget study under way and its advantages to the city were employed:

● 1. Speeches were given by the technical staff to all of the organized civic groups in Dyersburg. These organizations included the Rotary, Kiwanis, and Pilot clubs, and the Junior Chamber of Commerce. The advantages of capital budgeting were explained at these sessions and questions from the members were answered. When the study was finally completed, and prior to its adoption by the Board of Mayor and Aldermen, a second speech was made to each organization at which time the capital budget itself was presented briefly and the reasons for proposing certain items were explained. Each of the above-named groups went publicly on record as endorsing and supporting the capital-budget program and this approval increased individual citizen's interest in the finished product.

● 2. The Dyersburg *State Gazette*, the city's daily newspaper, gave excellent coverage to all steps of the budget's preparation. A regular series of articles covering the specific public-works needs of the city appeared twice weekly and, because they were written by a former alderman and recognized civic leader, these explanations of needed municipal projects were widely read and discussed.

● 3. A series of half-hour radio forums was made possible through the cooperation of the local radio station. There was a close tie-in between the radio forums and the newspaper articles in that the general subject discussed each Tuesday night on the radio was the same one being presented that week in the local newspaper. The method employed in each of the radio forums was roughly the same: recognized out-of-town authorities in the specific public-

works field under discussion gave brief talks during the first half of the 30-minute program, and the final 15 minutes were spent in answering specific questions sent in by local residents. Usually a panel of city officials and civic leaders assisted the guest speakers during the question period, and each program was presented by a different local citizen. In this manner, citizens were acquainted with the problems of their school system, recreational facilities, fire and police systems, and with city street and traffic difficulties, and local health and sanitation needs.

● 4. Since no direct audience participation was possible during the radio broadcasts because of the size of the studio, open forums were held on the afternoon of the radio presentation, at which a more or less informal discussion of the public-works needs under consideration was possible. Citizens were invited to these sessions, and there was much frank talk on city problems and needs which gave the technical staff a valuable insight into the thinking of the local people on these matters.

● 5. In order to reach many residents who might not carefully read the newspaper accounts or might fail to listen to the radio forums, a throw-away was prepared, 3,000 copies of which were printed and distributed by school children to the homes and business places of the city. This single yellow sheet bore the radio-broadcast schedule and a brief explanation of what the Dyersburg capital budget was intended to accomplish.

● 6. Probably the most unusual technique employed was a 40-second musical jingle played daily by the radio station to call attention to the Tuesday night forums. The jingle was also used as a "theme song" at the beginning and end of each radio program, and was exceedingly effective in building up the program's "Hooper Rating."

1950 Capital-Budget Recommendations

The capital budget itself was completed in January 1950 and was officially adopted by the Board of Mayor and Aldermen early the next month. Essentially, it recommended a program of improvements in the fields of police and fire equipment, garbage collection and disposal, street repair and extension, recreation facilities, water and electric department additions and extensions, and an extensive school construction and repair program. In addition, the report pointed out the limitations of the present water and sewerage systems, and proposed engineering surveys preparatory to an extension and improvement of these facilities. The program was presented as a 6-year capital budget, and improvements were programmed for specific years in line with a policy of meeting most urgent needs first and of undertaking in any year only as much as could be comfortably financed without leading to fiscal difficulties. In those years where heavy bond payments had to be met, the capital-budget program was kept to a minimum.

Because it was obvious that the number of improvements required by the city could not all be met from current revenues, several financial recommendations were made. A monthly garbage-collection fee was proposed in order that the burden of the cost of this service might be taken off the general fund. The city owned and maintained out of its general revenues two municipal cemeteries, and grave space was sold so cheaply that a large number of non-residents were using these facilities. The cost of maintenance of the cemeteries was increasing yearly out of all proportion to the amounts realized from the sale of lots. A perpetual-care plan was accordingly proposed in order to set up a fund, the interest of which would eventually go far to meet this annual cost. Looking into the future, the capital budget also proposed the institution of a sewer charge in order to amass a reserve which would assist in meeting the cost of sewer-line extension and the construction of a sewage-treatment plant.

Water Rates Remain the Same as in 1937

The water rates in Dyersburg remained the same as they had been in 1937, despite cost increases in both operation and maintenance. An increased water rate, sufficient to place the water department on a self-supporting basis, was accordingly recommended. An increase in the rate of admissions at the municipal swimming pool was proposed, since this facility was also failing to meet its annual operation and maintenance cost. As in the case of the municipal cemeteries, a large number of non-residents used this municipal facility, and it was felt that the present low rates, while possibly defensible if charged only to city taxpayers, were not appropriate when it became a question of subsidizing recreation for non-residents.

Two bond issues were recommended in the capital budget. A school bond issue of $175,000 was felt to be necessary in order to finance the major school needs of the moment. However, since the city would receive approximately $17,000 per year as its share of state tax revenues directly earmarked for capital improvements to school systems, these bonds could be paid off from this source of revenue without becoming a burden to local taxpayers. The issuance of an estimated $300,000 in sewerage bonds was felt to be necessary in order to recondition and extend the municipal sewerage system and provide sewage treatment. It was proposed that the sewer improvements be financed by means of revenue bonds repayable from a sewer charge.

Garbage Collection.—The construction field being what it was during 1950, not all improvements originally scheduled for that year were possible. The garbage-collection system financed by a service charge was set up, and is now the object of considerable local pride. Two packer-type trucks operate on a regular schedule and, as one citizen expressed it, "we have never had as good collection service before in our lives." After 10 months of operation, the only difficulty that has arisen comes from the fact that service is optional and a number of citizens have still failed to subscribe. While all commercial and business houses take the city's service, it is obvious that a concerted selling campaign to convince home-owners of the advantages of the service is necessary. In considering the 1951 capital budget, the Dyersburg Planning Commission went on record as officially requesting the Board of Mayor and Aldermen to appoint a city sanitary inspector, separate and distinct from the City Health Officer, with powers to check on violations of the sanitary laws and to enforce compliance with the municipal sanitary code if a sales talk did not bring the desired results.

Sewerage System Plan. — During 1950, a comprehensive master plan for the sewerage system of the City of Dyersburg was prepared by a firm of consulting engineers. The city is now in a position to program sewer-line extensions, the repair of the present system, and the construction of a treatment plant on the basis of comprehensive cost estimates and with the assistance of complete maps detailing the present status of the system and needed new lines. The sewerage survey, however, indicates present-day costs far in excess of those estimated at the time the original capital budget was prepared — the improvement of present lines and cost of extending service to new areas will be nearly double what was originally estimated. As a result, the need for a sewer charge is even more evident in 1951 than it was a year ago, and the revised capital budget for 1951 calls for immediate action on the part of the city in setting up a schedule of sewer charges.

Street Improvements.—While a sizable amount of street work was recommended in the 1950 capital budget, only minor improvements to the street system were made during this year, owing to the fact that most of the city streets were being torn up in order to install a municipal natural-gas system. Accordingly, the 1951 capital budget calls

(*Continued on page* 159)

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STREET BOX LIGHTS

AMBER— *Fire Alarm*

AND

BLUE— *Police Call*

By EDGAR P. GRIM
Chief, Electrical Bureau
Philadelphia, Pa.

ONE of the first acts of Samuel H. Rosenberg when appointed Director of Public Safety of the City of Philadelphia was the rehabilitation of the Fire Department. A vital phase of the operation of any fire department is its communications system —especially that portion of the communications system *which is supposed* to meet the public eye daily; namely, the fire-alarm box.

Along the streets of Philadelphia's 130 square miles of industrial and residential sections and undeveloped areas we have installed 2,984 fire-alarm boxes directly connected to the central office.

Location Unknown

In many instances, the locations of these fire boxes were not known even to the inhabitants of the vicinity. Director Rosenberg decided to identify the boxes unmistakably by an amber light. He then referred his decision to the electrical bureau, and our engineering department devised the method.

This is shown quite clearly by the photograph. The fixture for the amber lamp is a Crouse-Hinds VDA weatherproof Condulet, or housing, mounted on an FSC Condulet above the fire alarm box. In addition, as shown, we painted FIRE on a piece of Scotchlite and display these panels on both sides of every box in the city.

Where electricity was immediately available, the installation of the identification lights was a simple operation. In many cases, however, it was necessary to run underground or overhead conductors to the nearest source. Since November 15, 1949, we have installed 1,000 of these lights, and by the end of this year we expect to have one on every fire-alarm box in Philadelphia.

The amber identification light instantly denotes a fire-alarm box and the light can be seen for at least two blocks in any direction. Although the identification should be obvious even to a stranger in a neighborhood, our Fire Alarm Communications Division is trying to convince the public of the importance of knowing where the nearest box is and how to operate it.

Commenting on the new installations, illustrated above, Edgar P. Grim, who is the author of this article, writes: "We are convinced that the money used for this installation of identification lights and signs on both the fire-alarm and police-call boxes in Philadelphia has been well spent."

Police Call Boxes Also Identified

The positive identification of fire boxes worked so successfully that Director Rosenberg ordered the same procedure (using a *blue* light) in the case of the police-call boxes. Consequently, a blue identification light was installed on the top of each police box, with a luminous sign on either side of each box worded as you see it in the picture: Police Emergency Public Phone. A key is placed in each police box so that the public can use these boxes to call for help in case of emergency. It is only necessary for a citizen to turn the key, which opens the door of the police box, and lift off the receiver to be in immediate contact with the nearest police station. He states his trouble to the desk sergeant and the kind of help he needs is immediately dispatched to him.

These police boxes can also be used by the general public to report a fire if the police box is nearer than the nearest fire-alarm box, and the call will be handled with the necessary speed.

The Wichita Driveway Ordinance

Action by City Council spells out widths of curb cuts and spacing between driveways

BE IT ordained by the Board of City Commissioners of the City of Wichita, Kansas:

•

SECTION 1. *Definitions:* For the purpose of this ordinance, the following definitions shall apply to these words:

a) *Driveway.*—A place on private property for the operation of automobiles and other vehicles.

b) *Driveway Approach.*—An area, construction, or facility between the roadway of a public street and private property intended to provide access for vehicles from the roadway of a public street to private property. For clarification, a driveway approach must provide access to something definite on private property, such as a parking area, a driveway, or a door at least 7 feet wide, intended and used for the entrance of vehicles.

c) *Outside Sidewalk Line.*—A line parallel to the property line lying along the edge of the sidewalk nearest the street roadway or curb; or where no sidewalk exists, a line in the street right-of-way parallel to, and 4 feet from the line of the private property.

d) *Corner.*—The point of intersection of the lines of two street-curb faces extended into the street intersection.

e) *Curb Parking Space.*—A length of curb equal to 20 feet where an automobile or other vehicle can park.

f) *Parcel of Land.*—A lot, or lots, or a tract officially registered under one ownership.

g) *Curb Return.*—That portion of a curb next to a driveway approach which includes the radius of curvature, or the ramp-type lug on commercial or industrial-type pavements and which connects the driveway approach to the street curb.

•

SECTION 2. *General.*—(a) It shall be unlawful for any person to cut, break out, or remove any curb along a street or alley except as authorized by Ordinance No. 11-539 and subsequent revisions thereof.

b) It shall be unlawful for any person to construct, alter, or extend, or permit or cause to be constructed, altered, or extended any driveway approach which can be used only as a parking space or area between the curb and private property.

c) This ordinance shall be deemed to be supplemental to other ordinances regulating the use of public property, and in case of conflict, this ordinance shall govern. Provided, however, that in no event shall this ordinance be construed as amending or abridging Ordinance No. 13-950 (Minor Street Privilege Ordinance).

d) All permits granted for the use of public property under the terms of this ordinance shall be revocable at the will of the City Commission.

•

SECTION 3. *Width and Location of Driveway Approach.*—No driveway approach shall exceed 30 feet in width as measured along the outside sidewalk line, except that on streets marked as pertinent state or federal highway routes, a driveway approach may be constructed with a maximum width of 40 feet upon approval of the City Engineer. Where more than one driveway approach on a street front serves a single parcel of land, there shall be at least one curb-parking space between driveway approaches. The sides, edges, or curbs of driveway approaches shall be at right angles to the street curb.

•

SECTION 4. *Maximum Width of Curb Cut.*—For the purpose of constructing a driveway approach, no curb cut, opening, or section broken out or removed shall exceed 52 feet.

•

SECTION 5. *Distance Between Driveway Approach and Corner.*—No portion of a driveway approach, except the curb return, shall be constructed within 18 feet of a corner, and in no case closer than 2 feet to the property line extended.

•

SECTION 6. *Curb Return Radius.*—The radius of curvature of the curb return shall not exceed the distance between the curb and the outside sidewalk line.

•

SECTION 7. *Street Structures.*—No driveway approach shall interfere with municipal facilities such as street-lighting poles, traffic-signal standards, signs, catch-basins, hydrants, crosswalks, bus-loading platforms, utility poles, fire-alarm supports, underground pipes or ducts, or other necessary street structures, and the City Engineer is authorized to order and effect the removal or reconstruction of any driveway approach which now conflicts with street structures or which will conflict with street structures in the future. The cost of removing or reconstructing or relocating such driveway approaches shall be at the expense of the abutting property owner.

•

SECTION 8. *Building Division Cooperation.*—Any plans submitted to the Building Inspector for approval which include or involve unusual driveway approaches or problems, shall be referred by the Building Inspector to the City Engineer for his approval before a building permit is issued.

•

SECTION 9. *Unusual Conditions.*—The City Engineer is hereby authorized to grant in writing variances from the strict application of the provisions of this ordinance, provided he first determines that the following conditions are present:

1. The exception or variance desired arises from peculiar physical conditions not ordinarily existing in similar districts in the city, or is due to the nature of the business or operation on the abutting property.
2. That the exception or variance desired is not against the public interest, particularly safety, convenience, and general welfare.
3. That the granting of the permit for the exception or variance will not adversely affect the rights of adjacent property owners or tenants.
4. That the strict application of the terms of this ordinance will work unnecessary hardship on the property owner or tenant.

•

SECTION 10. *Saving Clause.*—If any section or part thereof of this ordinance shall be held illegal, unconstitutional, or void, this shall not be construed to render void any other provision or requirement of this ordinance.

•

SECTION 11. *Penalties.*—Any person violating any of the provisions of this ordinance, or causing, permitting, or suffering the same to be done, shall be guilty of a misdemeanor and upon conviction shall be fined not more than One Hundred Dollars. Each such person, firm, or corporation shall be deemed guilty of a separate offense for each and every day or portion thereof during which any violation of any of the provisions of this ordinance is committed, continued, or permitted.

The issuance or granting of a permit shall not be deemed or construed to be a permit for, or an approval of, any violation of this ordinance.

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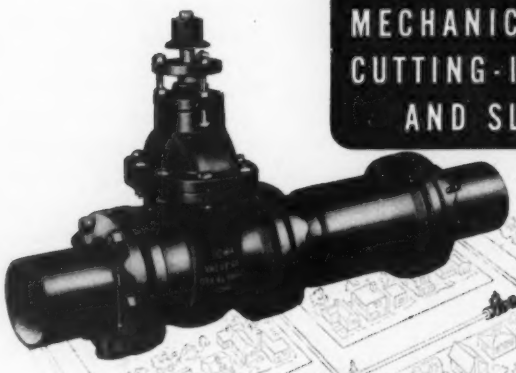

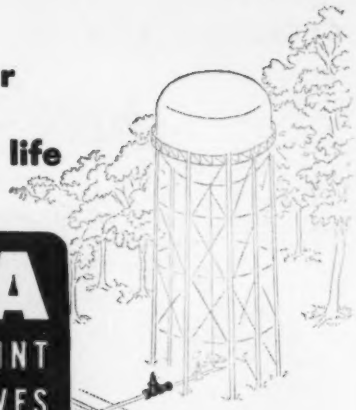

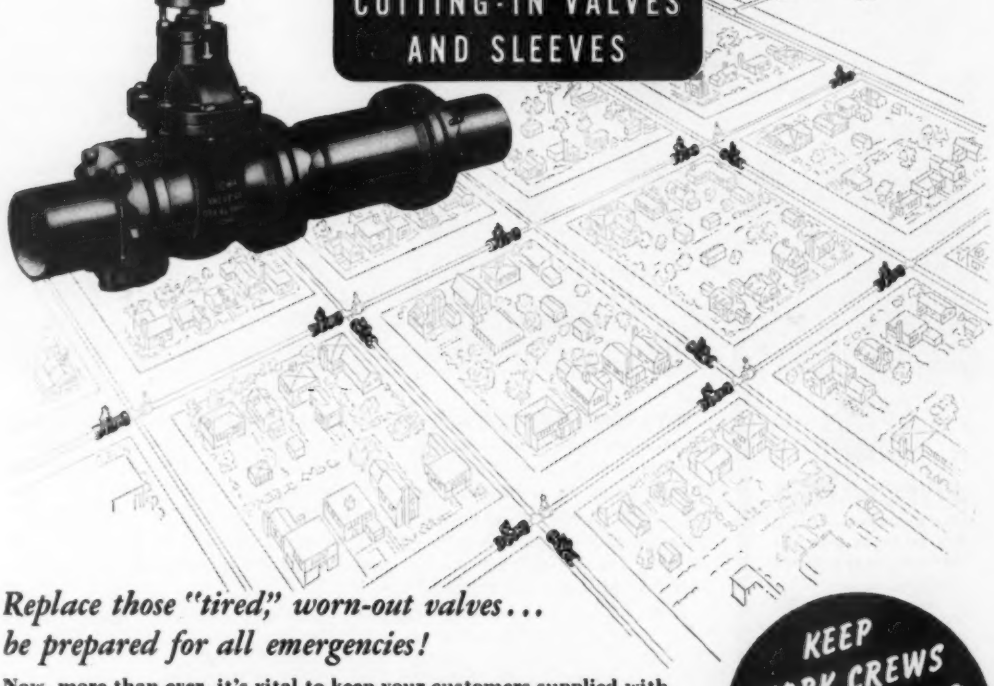

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Urban Redevelopment Progress in the National Emergency

MORE than 200 cities and counties in the Continental United States and insular possessions took steps to qualify for participation in the slum-clearance and redevelopment program, provided for under Title I of the Housing Act of 1949, during the first year's operation of the federal-aid program, the Housing and Home Finance Agency has reported.

At the end of 1950, a total of 222 localities in 31 states, the District of Columbia, Hawaii, Puerto Rico, and the Virgin Islands had capital-grant reservations outstanding in the amount of $172,896,023. Of these localities, 71 had obtained Agency approval of planning advances amounting to $3,065,639, and 41 localities had obtained prior approval of expenditures from local funds which may later be included in the total cost of the federally aided projects.

The broad scale of this participation [said Raymond M. Foley, HHFA Administrator] emphasizes the widespread determination of communities to rid themselves of slums and blight with the aid of this program, despite the difficulties which may stem from the present international situation. The President stated in his recent budget message to the Congress that, because of the great importance of encouraging orderly development of our cities, and the small amounts of manpower and other resources involved in the early stages, steady progress should continue in the planning stage of the program. The President added that local authorities may acquire sites but will not demolish existing buildings or otherwise redevelop areas unless the redevelopment is consistent with defense requirements. Accordingly, the program will proceed under policies adapted at the beginning of hostilities in Korea —that is, the planning phases will continue as before, with this Agency retaining, under its contract provisions, the authority to defer the start of demolition if the requirements of national defense make such action necessary generally or in an individual locality.

Many Small Cities Active

A wide range of redevelopment in line with over-all community plans is being contemplated by various localities, reports Nathaniel S. Keith, Director of the HHFA's Division of Slum Clearance and Urban Redevelopment. The projects involved will serve a variety of new uses, including housing, community facilities, public buildings and improvements, and needed industrial and commercial expansion.

The 222 cities and counties for which capital-grant reservations were outstanding at the end of 1950 range in size from Clayton, Ill., with a population of 864, to New York City. All 18 of the cities in the United States with a population over 500,000 are included.

The breakdown by population groups is as follows:

Under 10,000	36
10,000 to 25,000	36
25,000 to 50,000	36
50,000 to 100,000	36
100,000 to 250,000	43
250,000 to 500,000	14
500,000 to 1,000,000	13
Over 1,000,000 (including two counties)	7
	221

Not included in the above is a grant for the Puerto Rico Housing Authority for 73 municipalities in Puerto Rico. They are considered in the total of 222 localities with approved capital-grant reservations as counting for one locality.

Of the 222 localities with grant reservations, 71 have been approved for planning advances to cover all necessary expenditures in connection with identifying eligible projects, determining project costs, preparing redevelopment plans, and other steps prerequisite to the signing of loan and grant contracts. Such advances will be repaid out of any funds made available to communities for the execution of the projects.

Farmington, Conn., Adopts Unusual Cost-of-Living Pay Plan

THE pay plan recently adopted by the Town of Farmington, Conn. (1950 pop., 6,794), includes a rather unusual cost-of-living feature. Advantages of the plan are: that pay rates are always in the same relationship to each other; changes are made at reasonable intervals with a minimum of computation, and the employee's purchasing power remains approximately level, although the taxpayer is protected from extreme rises by the limit of three intervals per year.

Because of budget considerations, the cost-of-living feature will not take effect until the beginning of the next fiscal year, July 1, 1951, although the pay plan went into effect January 1.

The pay plan and the cost-of-living feature are tied together by the use of a scale, consisting of intervals of 3.344% of the lower point of each interval. Seventy intervals extend from 100 to 1,000 on the scale, and by moving the decimal point, the intervals may be used between 10 and 100, 1,000 and 10,000, etc. The points on the scale are computed easily and accurately by the use of logarithms. Each interval is proportionate to its position in the scale. For instance, the first interval above 1,000 is 10 times as large as the first interval above 100.

Before the cost-of-living feature could be applied, it was necessary to have a sound pay plan that gave consideration to the similarities and differences of duties and responsibilities of the various positions within the system, and to the prevailing rates in other towns and private employment in the area. The plan consists of ranges from a minimum or starting rate, with annual step increases, to a maximum. The ranges are five steps each; the steps two intervals apart on the scale. This makes the maximum of the range 31.1% higher than the minimum.

After the pay plan was completed, the cost-of-living feature was applied to it. The Bureau of Labor Statistics Consumers' Price Index is used as a base. At the time the pay plan was set up, the latest published index was 174.8, which fell in the interval between 169.26 and 174.92 on the scale. The pay plan was pegged at the lower point of this interval—169.26. In operation, whenever the index increases to a point higher than the next point on the scale above the one at which the pay plan is currently pegged, the entire pay plan is moved down one interval.

To allow reasonable forecasting in budgeting, the net increases are limited to three, or 10.4%, in any fiscal year, even though the index may increase more. Similarly, in fairness to employees, net decreases are limited to three in any fiscal year. Reaction of employees to the plan has been favorable.

By ROBERT D. HEITSCH
Town Manager
Farmington, Conn.

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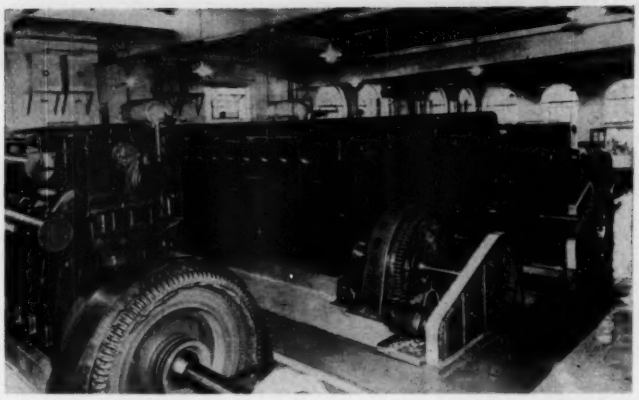

A total output of 3,800 kw is generated in the engine room of the Paragould electric plant, which is owned and operated by a community of 7,000 persons.

By J. C. HOLLAND
Superintendent
Light Plant Commission
Paragould, Ark.

IN THE late thirties, $49,000 sounded like a lot of money to the 7,000 residents of Paragould, Ark. Today it still does. But at the same time, no one in town seems to be sorry that he voted for this sum to be raised in taxes to help build a new, municipally owned power plant.

Today Paragould's power plant is virtually debt-free. Through its operations, residents receive free street lighting, the wattage of which has just been increased. Schools are given 80% of their electrical-power requirements without charge, while accredited civic and sports organizations are getting their electricity at a cost of only 1.6 cents per kw-hr. Churches are billed at 1.6 cents per kw-hr.

Diesel Operation from the Start

Two points stand out among the figures in the latest summary of operations. First, the plant has been supervised from its beginnings with a nonpolitical board of directors, virtually assured each year under the election rules. Second, diesel power has been in use since the plant began operating, with the diesel engines supplied by the Superior Engine Division of the National Supply Company. Originally the plant was aided by a 5-mill general tax. However, it pays its own way now, and the tax has been wiped off the books.

Last year, for example, the plant enjoyed an operating revenue of $194,937. Of this, the engine operation amounted to $103,938, leaving ample leeway for other expenses, which included distribution of power, customer accounting and collections, administration, advertising and sales promotion, taxes, etc. The net revenue remaining was $35,858.

The project was not without initial risks. When it was first put up to the city's voters in the late thirties, it was rejected. The second time, the issue passed, and project approval was secured from the State Utilities Commission of Arkansas.

No commitments were asked of any of the city residents prior to the building of the power-house and transmission line. As it turned out, the move would have been unnecessary, as 65% of the total power requirements for Paragould was booked through the new station, and an additional 7% received as soon as it could be handled. At the present time, it is estimated that the city plant handles about 85% of the total community load. By a coincidence, the same amount of money paid out by taxpayers on municipal bonds (about $49,000) has already been returned with free municipal lighting which, if billed, would have cost almost as much. With this, along with donations or discounts to schools, churches, and charities, the light-commission statistics show that the total benefits to the city are over $122,000.

Operations commenced at the Paragould plant on January 1939, when the switch was thrown on the three original Superior diesel engines that are still in operation. Although the plant was new, and operating routines and schedules still uncertain, the cost of operating the engines was only about half ($33,979) of the gross revenue they produced ($61,709) the first year. Engine-maintenance costs, over the long pull, have been almost negligible, averaging about $4,400 annually.

As in almost every other community whose plants and shops handled government contracts, the power demand in Paragould was increased during the last years of the war. Two more engines — Superior stationary diesels — were installed to handle a heavier load that resulted in an operating revenue, through 1945 and 1946, of over $100,000 annually.

As a further indication of dependability, still another Superior engine (1,440 hp and 1,000 kw) was recently selected to add to the existing facilities and thereby increase the total output to 5,700 horsepower. This engine, when coordinated with the smaller units, will aid in forming a more powerful, compact generating plant that will supply a total of 3,800 kw.

Brings New Industry

In one important respect, the public power plant provides one of the most powerful inducements the city has been able to offer new industries who eye Paragould as a possible plant site. Years ago, Paragould's location in the heart of a fine timber belt made it the center of the barrel-stave industry, with about 30 woodworking companies active in the town. Only two of the companies remained behind as the industry moved further south, but these two have benefited by cheap electric current that now amounts to a low 1¾ cents per kw-hr. In the meantime, a shoe factory, employing 350 persons, was established in Paragould because the power plant's board was able to offer low electric rates. A shirt factory, now also a part of Paragould's industrial life, received the same treatment. At the same time, private-utility interests handle the power load outside Paragould without competition from the city.

General policies of the Paragould station are determined by a five-man commission, with each serving a five-year term of office. One member is elected each year.

Municipal News Brevities

Good Citizenship Award Goes to Visalia (Calif.) Mayor

The National Advertising Council has selected Mayor Jack Davis of Visalia, Calif., for its 1950 Good Citizenship Award. The award was won for the Mayor's "get-out-the-vote" movement, organized last summer before the general election. The Mayor personally sponsored newspaper and radio advertising and sent literature to the voters. As a result, Visalia's percentage of eligible voters who went to the polls last November topped that of every other incorporated city in the county.

Many Ways to Solve Parking Problem

Determination to solve local parking problems is becoming increasingly evident. Perhaps inspired by the example of the Dutch Government in reclaiming land from the Zuider Zee, the City of St. Charles, Mo., has decided to provide a parking lot for 200 automobiles on a large fill to be built in the Missouri River. This will end a parking bottleneck on Main Street, which runs parallel to the river. It will cost about $25,000, according to preliminary estimates, and will be financed by parking meters. The Army Corps of Engineers must grant a permit for the fill and see to it that there is no interference with navigational interests.

Recent 'Wins" by Pittsburgh Legal Department

The City of Pittsburgh, Pa., has been upheld by the Pennsylvania Supreme Court in two important cases. In one case, the Court held that the city has authority to grade eating places as a public-health safeguard. In the other, it upheld the city's right to build a large amphitheater in Schenley Park, and to appropriate funds for that purpose.

The public-health ordinance provides that the city Health Department can proceed to enforce an ordinance which provides for the grading of eating places by degrees of sanitation, and the designation of such grades by "A," "B," and "C" labels posted in their windows.

The much-publicized proposed amphitheater can now also proceed, though actual construction must, of course, await the lifting of federal restrictions on non-essential building.

Suburb Against Annexation by City

The sensitivity of small suburbs to plans for their consolidation or annexation by the large city was illustrated in January, when the village board of Oak Park, Ill., voted to oppose any proposal to incorporate the village into a greater Chicago. The resolution adopted urged residents of the suburb to write to their state legislative representatives voicing opposition to such a plan. The action was taken in response to a measure introduced in the upper house of the State Legislature for creation of a Greater Chicago commission to study consolidation of the Chicago area and annexation of suburban communities.

Laguna Beach Starts New City Hall

Ground-breaking ceremonies for a new $300,000 city hall, the first one to be owned by the city, were held in Laguna Beach, Calif., late in January. The building is expected to cost $300,000, and will occupy a site adjoining the Fire Department headquarters. Mayor J. Frank Wharton headed a group of city councilmen and civic leaders at the ceremonies.

Planning Makes Progress In Easton, Pa.

Organization of the Easton Area Regional Planning Commission was completed recently by the City of Easton, Pa., when it adopted by resolution a constitution that had already been adopted by three surrounding boroughs and three surrounding townships.

Philadelphia's Chinese Wall To Be Demolished

If the national emergency doesn't interfere, Philadelphia will soon get the most important face-lifting it has had in many years. The 10-block-long "Chinese Wall" along Market Street and the Pennsylvania Railroad's Broad Street Station, one of the oldest in the country, will both be demolished. A new highway, to be called Pennsylvania Boulevard, will link 30th Street with Penn Square at Broad and Market Streets—the place where William Penn's statue now overlooks the city. The railroad already has appropriated $10,000,000 for the project; and the city has made the first of four payments of $1,000,000 to pay the railroad for its right of way where the boulevard will be built. The complete project is expected to cost $25,000,000.

Paterson Industrial Commission Surveys Production Resources

A comprehensive program to mobilize the industrial resources of an entire community for defense production has been launched in Paterson, N. J., by the Paterson Industrial Commission. The program was ordered by Mayor Michael U. De Vita to assist Paterson manufacturers in preparing for and securing defense subcontracts, and to minimize economic dislocation of the community during the switch-over from civilian to defense production.

The basic objective of the plan is to assemble for the benefit of primary contractors throughout the country all data relating to plants, machines, manpower, and production capacity available in Paterson for subcontract work. The information is now being gathered and catalogued by the city's Industrial Commission under the direction of its Executive Secretary, Joseph M. Zimel. The Commission will act as a confidential clearing-house for the city's potential subcontractors and the nation's primary contractors.

Georgia Cities to Get Home Rule

By a vote of 46 to 6 the Georgia State Senate passed, on January 31, the Gowen home-rule measure, which the House had approved previously. Conceded to be a reasonable and workable home-rule bill, the measure was welcomed by Georgia municipalities.

In commenting on the new bill, *The Atlanta Constitution* declared that Georgia cities will be largely self-governing as a result of home rule, and will not be forced to run to the General Assembly every time they want to open a new street or change the route of the garbage trucks. The Legislature will benefit, too, the *Constitution* declared, as more than half that body's time now is expended acting upon strictly local matters which have no bearing on the business of the state at large.

Tape Recordings for Cambridge City Council

As the result of a council decision on January 27, Cambridge, Mass., was added to the sizable list of cities recording council meetings by the tape process.

Los Angeles City Workers To Have First-Aid Classes

All of the 28,732 municipal employees of Los Angeles, Calif., are to receive instruction in first aid, Mayor Fletcher Bowron has announced. Roger Plaisted, Director of Safety Services for the American Red Cross, awarded instructor's certificates to 23 city workers in January. The instructors will teach first aid to other city employees, and other instructors will be trained as rapidly as possible to speed the work. Mayor Bowron has pointed out that Red Cross training is one of the nation's most important civil-defense measures.

Dalton, Ga., Gets Tough With Carnivals

The City Council of Dalton, Ga., has come up with an approach to the licensing of carnivals and road shows which other small communities might do well to emulate.

For several years Dalton has had an ordinance calling for a $250 per week license fee from such groups. But most of them have been sponsored by local charities or other organizations, and the carnivals have usually shoved onto these groups the obligation of buying the license. The city, in turn, has hesitated to levy the assessment on the sponsor, and the show has left town with a big take, leaving little local profit. Now, as the result of the Council's action, the carnivals must pay up; no excuses accepted.

Pueblo, Colo., City Manager Refuses Pay Boost

John Oliver Hall, City Manager of Pueblo, Colo., is one man who isn't personally concerned about national wage and price freezes. In January, offered a salary of $16,000 a year by the City of Niagara Falls, N. Y., he announced that he would resign his $12,000 post at Pueblo. However, the Pueblo City Council promptly rallied to his support and offered him a $3,000 pay increase if he would stay. To everyone's surprise, Mr. Hall announced later that he would stay on at Pueblo, but that he would refuse an increase in his salary. When questioned, he said it "was hard to turn down that kind of support and cooperation." "Besides," added he, "money isn't everything."

Portland, Ore., Has 100th Birthday

Mayor Dorothy McCullough Lee managed, after a deep breath, to blow out 98 of the 100 candle on Portland's century-anniversary birthday cake at the city's celebration on January 23. To carve the cake Mayor Lee used a sword once carried by Col. Edward Everett of Oregon's old 3rd Regiment. The community officially became a city in 1851 when the Oregon territorial legislature completed official action to grant a charter.

Denver Finishes Salary Survey

Aimed at equalizing the pay of city employees with that of employees in private industry, a salary survey of approximately 300 business and industrial firms has recently been completed by the City of Denver. Thirty-five field workers were used in the one-month survey, the results of which are being analyzed by Edna Roller, a city classification officer. According to Mayor Quigg Newton, the City Council will be asked to approve pay raises in cases where municipal employees are drawing less than workers performing the same general type of work in private employment.

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FIGURES show that the Milwaukee Sewer Department has reduced catch basin cleaning costs by over 60 percent since switching from hand labor to a Bucyrus-Erie Hydrocrane. Equipped with an orange-peel type hydraulic catch basin cleaner, the department's Hydrocrane cleaned out an average of 30 catch basins per day — even under adverse winter conditions.

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The Municipal Bond Market

Cities Now Reap Benefits From Low Interest Rates

By CATHERINE CLARK
Municipal Service Department
Dun and Bradstreet, Inc.
New York, N. Y.

THE municipal bond market, after enjoying a brisk upward climb from the middle of December to the middle of January, has paused to catch its breath. While bond yields have not yet declined to the low point which they reached in the early part of 1946, they are nevertheless lower than at any time since September 1946—and cities which have sold bonds recently have reaped the benefit of these low interest rates. The 1946 low point was achieved after several years of scarcity of new issues, while the recent low follows four years of record borrowing. In the present case, the heightened value which steeper income-tax rates have given to the tax-exemption feature of municipal bonds is primarily responsible for the decline in interest rates.

As an indication of the recent strength of the municipal market, *The Bond Buyer*'s index of the yield on 20 municipal bonds fell from 1.74%, on December 14, to 1.60%, on January 11, and on February 8 was fractionally lower at 1.58%. One year ago it stood at 2.05%. *The Bond Buyer*'s index, of course, is based on the yield of bonds of 20-year maturity, and the change in yield of shorter-term bonds is not so startling as this 0.47% decline.

What Decline Means

What does the decline in interest rates mean as far as individual cities are concerned? Perhaps the question can best be answered by taking up a few concrete examples of municipalities which have sold bonds both this year and last. For reference, these examples are shown later in tabular form. These particular examples were chosen because the change in the general market between 1950 and 1951 affected them almost equally. In each case, *The Bond Buyer*'s index had declined about 0.45% between the 1950 and 1951 sales.

A glance at the table indicates that every one of these municipalities was able to sell bonds in 1951 at a net-interest cost at least 0.20% below the 1950 cost, and in some cases the difference was considerably more. In seven of the eight examples, in fact, the difference exceeded 0.33%. While even a 0.20% decline in the interest rate is not to be sneezed at (on $1,000,000 bonds the difference between an interest rate of 1.20% and one of 1.40% means a saving of $2,000 a year in interest charges), one may wonder why the decline in net-interest cost was greater in some cities than in others.

The condition of the general market, of course, is not the only factor affecting interest rates and bond yields. The quality of the security and the maturity also help to decide whether the yield on a given bond changes more or less than the average. A further glance at the table indicates that there is considerable variation in the average maturity of these issues and perhaps also in the market's idea of their investment quality. By and large, the greater the esteem in which a given credit is held, the less the yield of its bonds is affected by general market conditions. Low interest rates have prevailed for so many years now that investors are reconciled to a small yield—but *some* return on their capital they still demand. The lower the yield at which a bond has been selling, the less room there is for further decline.

Selected Examples of Bond-Issue Sales—This Year and Last

Municipality	*Date of Sale*	*Amount of Issue*	*Average Maturity (Years)*	*Net Interest Cost Per Cent*	*Difference in Net-Interest Cost Per Cent*
Kansas City, Mo.	1-24-51	$ 6,819,000	10-1/3*	1.2663	0.2245
	1-18-50	5,338,000	10-1/3*	1.4908	
Anne Arundel County, Md.	1-30-51	1,750,000	12-5/6	1.4826	0.34721
	3- 8-50	1,750,000	13	1.82981	
Philadelphia, Pa.	1-30-51	6,925,000	13-1/3	1.5614	**
	5-11-50	5,775,000	21-3/4	2.2679	
Minneapolis, Minn.	1-31-51	2,378,000	10-1/3	1.4268	0.367
	3- 1-50	4,980,000	10-5/6	1.793	
Waterbury, Conn.	2- 1-51	2,251,000	12-5/6	1.3652	0.3657
	4-12-50	2,475,000	13-2/3	1.7303	
Boston Met. Dist., Mass....	1-25-51	14,720,000	18-2/3	1.459	0.447
	2- 8-50	1,872,000	20-5/6	1.906	
Dallas, Tex.	1-16-51	4,000,000	10	1.412	0.3336
	1-17-50	9,100,000	10-1/2	1.7456	
N. Y. City Hous. Authority	1-30-51	19,225,000	29-2/3	1.99706	0.62494
	2- 1-50	41,400,000	29	2.622	

* Partly callable before maturity. ** Issues not comparable as to average maturity.

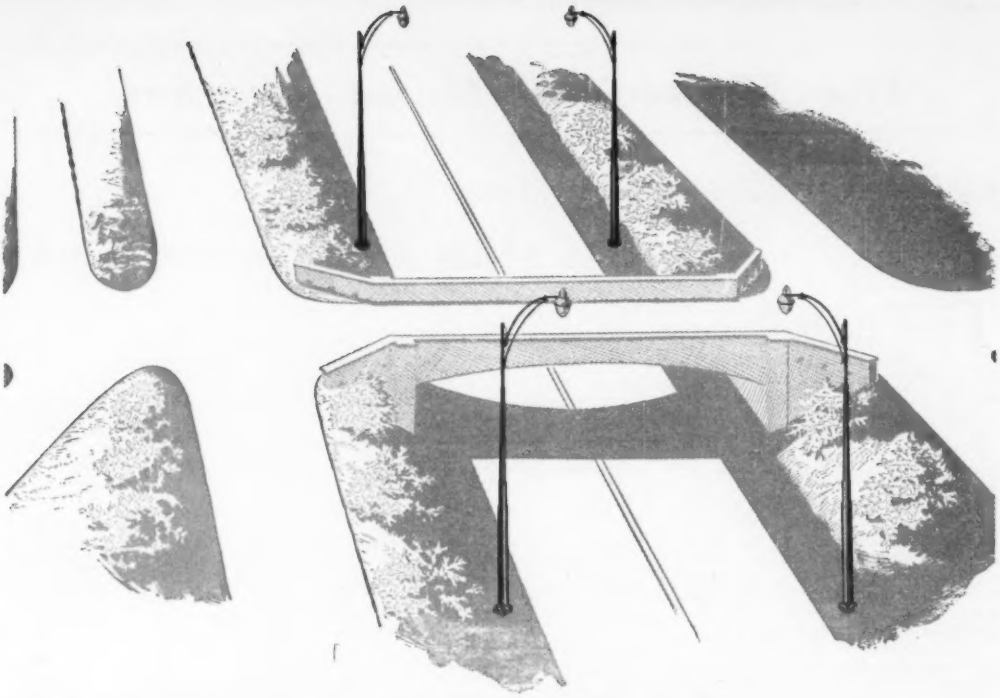
Maturity Dates Important

Again, while bonds of short maturity have for some years now yielded less than bonds of longer term, in the recent upturn in the market yields on short-term bonds have shown less decline than those on bonds of longer maturity. As a result, the difference in net-interest cost between 1950 and 1951 sales has, in general, been smaller when the bonds sold were of fairly short maturity.

These points are again illustrated in the table. Of all the examples, Kansas City received the lowest net-interest cost on both its 1950 and 1951 issues; however, the *difference* between the 1950 and 1951 net-interest cost was also the smallest. The table indicates that the average maturity of the Kansas City issues was a little over 10 years, virtually the same as that of the Minneapolis and Dallas issues. But the decline in net-interest cost from 1950 to 1951 was only .2245% in Kansas City, compared with a 0.367% in Minneapolis and a 0.3335% in Dallas. However, the Minneapolis and Dallas issues were non-callable, whereas about half of the Kansas City bonds, those of longest maturity, became callable before maturity, so that their average maturity will probably work out to considerably less than 10 years.

At the other end of the scale, the greatest difference in net-interest cost between 1950 and 1951 was shown by New York City Housing Authority bonds. The difference here was 0.62494%—but the average maturity of these bonds was almost 30 years.

Though the comparison of the net-interest cost at which bonds were sold in 1950 and 1951 is certainly of interest to any city considering the sale of bonds, another point should not be overlooked: in both years—one might say in all years—among bonds of similar security, those of shortest maturity were sold at the lowest net-interest cost.



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Zoning and Planning Notes

Edited by NORMAN WILLIAMS, JR.

Designation of Courthouse Sites Not Reviewable by Initiative

CALIFORNIA. *Simpson* v. *Hite*, 222 Pacific (2d) 225 (Supreme Court, Sept. 29, 1950).

A CALIFORNIA state law required each county board of supervisors to provide "suitable quarters" for superior and municipal courts. The supervisors of Los Angeles County decided that new quarters were needed; a site for buildings for both courts was selected, and was approved by the City Planning Commission. The site was acquired, building contracts were let, and substantial payments made. At this point an initiative measure was proposed to designate a different site, located across the street, together with a declaration of the popular will that the original site should be used for parking or some other useful purpose. An original proceeding was brought in the California Supreme Court, and that Court issued a peremptory write directing that the proposed initiative should be omitted from the ballot.

Initiative is available only for matters within the legislative province, and the Court held that in this situation legislative action was completed with the law directing the supervisors to provide suitable quarters. Once this legislative policy was declared, all the actions of the Supervisors —in deciding that new buildings were necessary, selecting and acquiring a site, designing buildings, and letting contracts— were all administrative matters; and the initiative could not interfere with them. In addition, the Court reviewed the elaborate statutory procedure for designating all elements of the master plan, and pointed out that no provision was made for sites designated by initiative.

Interim Zoning Ordinance Invalid

PENNSYLVANIA. *Kline* v. *City of Harrisburg*, 68 Atlantic (2d) 182 (Supreme Court, June 25, 1949).

The Harrisburg City Planning Commission engaged a professional consultant to draft a zoning ordinance in 1945 and received his proposal in 1946. However, since in May 1949 no proposed ordinance had been reported by the Commission to the City Council, at that time the Council passed an "interim" zoning ordinance— freezing the status quo in certain residential districts until a zoning ordinance had been completed and adopted, and in particular indicating two areas restricted to one-family detached houses. The boundaries of these areas coincided with those proposed by the zoning consultant. This interim one-family district was challenged by a developer who proposed to build five garden-apartment buildings on a four-acre tract in one of these areas, and the ordinance was held invalid.

The opinion of the lower Court, adopted by the Pennsylvania Supreme Court, contained an excellent review of the problems of interim zoning. In essence, the Court held that no zoning ordinance could be legally effective unless the procedure for adoption complied with the prescribed statutory requirements—including a report by the Planning Commission, public hearings held after notice, and the appointment of a board of appeals to help administer the ordinance. None of these steps had been taken in this case. The opinion also held that the broad home-rule and the general welfare clause did not authorize the passage of a zoning ordinance.

The *Kline* opinion contained a detailed review of the cases on interim zoning, and of Pennsylvania zoning cases in general, together with some interesting historical references on zoning in Pennsylvania. The Court indicated that, if the legislature wanted to authorize the passage of such an ordinance, it could do so with the proper safeguards. Finally, the Court rejected a suggestion that the present ordinance might be valid for a reasonable time, but not indefinitely, especially since no time limit was indicated in the ordinance.

Minimum Building Size

NEW YORK. *Flower Hill Building Corporation* v. *Village of Flower Hill*, 100 New York Supplement (2d) 903 (Supreme [lower] Court, Nassau County, June 8, 1950).

In this case petitioners sought a peremptory order that a village ordinance forbidding new residences with less than 1,800 square feet dealt with matters outside the proper province of zoning and so was invalid. The Court held that this might be a proper subject for zoning, and directed a trial on the merits—as in the New Jersey case reported last month.

The tenor of the opinion runs counter to a considerable weight of authority, apparently without realizing it; and the discussion itself is an unhappy example of lack of realistic understanding of the basic purposes of zoning. The opinion made four points. First, the New York zoning enabling act for villages authorized regulations on the "bulk" and the "size" of buildings, and the Court felt that this should permit regulation of minimum as well as maximum size—which was arguable enough on the point of statutory authorization, though not very helpful on the basic constitutional issue. Second, after a review of its background and history, zoning was described as an instrument for the improvement of living conditions — and so the Court made an eloquent statement in favor of judicial cooperation in the broad interpretation of zoning laws. Third, the Court cited and distinguished a Michigan case invalidating a similar regulation of minimum building size * and argued that cases upholding minimum acreage and minimum building height † should help to uphold the present regulation. Finally, the Court argued that zoning could protect the character of the existing development and living habits in the community.

Apart from its shortcomings in handling legal precedent, the primary trouble with this opinion apparently arose from a confusion of two possible meanings of "improvement of living conditions." If the phrase refers to promoting better housing in a better environment for the whole population, then the widespread adoption of regulations which prohibit small and (in this case) even medium-size houses on good residential land would hardly seem to contribute much to that goal. If, on the other hand, the phrase refers to protection of an expensive neighborhood against the intrusion of more modest housing, then a serious constitutional point arises—should the law protect wealthier citizens from living near less wealthy citizens? Most American courts have said a sharp "No."

Of course, everyone interested in housing agrees that more adequate space is needed. But it is not really seriously argued that prohibitions of small houses within certain areas will raise housing standards. Almost everyone is realistic enough to recognize that, particularly in a period of high building costs, the only effect of such provisions is to discourage new low-cost housing, or to force it into a less desirable environment.

* Incidentally, the case cited was not the most recent Michigan case on the point.

† The case cited on minimum building height actually involved maximum building height and the protection of light and air.

Subdivision Control

CALIFORNIA. *Roussey* v. *City of Burlingame*, 223 Pacific (2d) 517 (District Court of Appeal, Nov. 8, 1950).

A local ordinance in Burlingame required the approval of the City Council for the subdivision of any tract of land, and further made compliance with that ordinance a condition precedent for a building permit. The ordinance did not set forth any standards on which permission to subdivide should be granted. When the ordinance was challenged, the city relied on this fact to interpret the ordinance as a grant of unlimited discretion. The Court held that the ordinance was subject to the same limitations as the police power on which it was based and that certain standards—in particular, reasonableness—had to be read into the ordinance to make it constitutionally valid. The case was then remanded for a trial on the merits.

Many Cities and Counties have solved their Tax Accounting problems with an

UNDERWOOD SUNDSTRAND TAX ACCOUNTING MACHINE

This Underwood Sundstrand machine is designed specifically for tax extension work. The tax rate is set on the machine and all tax amounts are computed and printed automatically. Whenever the fraction of a cent in a tax amount is 5 mills or more, the full cent is printed; if less than 5 mills it is dropped, automatically. Multiple rates or installments are handled by multiple multipliers in the machine. The machine adjusts quickly for other municipal accounting operations. Above is the Sundstrand Automatic Tax Accounting Machine operating in the Town of Moreau, N. Y., population 4,950. Making the Assessment Roll by machine saved the assessors 28 days. In December, when the new tax rate is set, it is placed in the machine which then computes the taxes automatically. Other town accounting operations will be performed by this same machine.

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Sales and Service Everywhere

Legal Notes and Decisions

Prepared by NATIONAL INSTITUTE OF MUNICIPAL LAW OFFICERS
Charles S. Rhyne, General Counsel

Admission Taxes—For Revenue Purposes Only—Validity

Where ordinance enacted solely to raise revenue imposed an additional tax of 2 cents for each admission ticket on persons carrying on basketball, football, softball, or baseball games, held that ordinance was valid. *City of Stockton v. West Coast Theaters*, 222 Pac. (2d) 886 (Cal., Oct. 6, 1950).

Building Permits—Construction of Drive-In Theater Not Nuisance

In action seeking to enjoin issuance of building permit for construction of drive-in theater in city, held that proposed drive-in theater having in-car loudspeakers, concession stand, and rest rooms did not constitute a nuisance. *City of Somerset v. Sears*, 233 S. W. (2d) 530 (Ky., Oct. 27, 1950).

Building Permits—Denial of for Church Because of Off-Street Parking Facilities—Unreasonable

In action to compel issuance of building permit for construction of church, held where church was to seat 182 persons and there was to be furnished off-street parking facilities to accommodate 213 persons, that ordinance requiring places of assembly to have space for off-street parking was substantially complied with, and denial of permit was unreasonable and arbitrary. *State ex. rel. Tampa, Fla., Company of Jehovah's Witnesses v. City of Tampa*, 48 So. (2d) 78 (Fla., Oct. 6, 1950). *Reh. den.*, Oct. 27, 1950.

Competitive Bidding—Award to Other Than Lowest Bidder Not Arbitrary

Where department of public works opened bids for electrical contract and lowest bid was not accepted on ground it was not lowest responsible bidder because it did not possess necessary technical personnel, held that action of Board of Contract Responsibility was not arbitrary in refusing to award bid. *Martin Epstein, Co., Inc., v. City of New York*, 100 N. Y. S. (2d) 326 (N. Y. Sup. Ct., N. Y. Co., Sept 12, 1950).

Competitive Bidding—Contract to Furnish City With Natural Gas Not Subject To

Where city and defendant entered into contract whereby defendant agreed to furnish natural gas for city-owned gas distribution system, held that contract did not grant franchise because defendant had no authority to use public property and therefore competitive bidding requirement did not apply. *Young v. City of Morehead*, 233 S. W. (2d) 978 (Ky., June 20, 1950). *Reh. den.*, Dec. 1, 1950.

Contracts—Power to Reject Highest Bid

In mandamus proceeding to compel acceptance of highest bid for lease of certain lands devoted to airport purposes, held that under provisions of city charter authorizing public-utilities commission to lease lands and requiring director of property to arrange for the release, the commission and not the director of property had the ultimate power to accept or reject bids at its discretion. *Laurant v. City and County of San Francisco*, 222 Pac. (2d) 274 (Cal. Dist. Ct. of App., Sept 28, 1950).

See article by Charles S. Rhyne on page 86 of this issue.

Eminent Domain—City Authority To Condemn Water System

In action by city to condemn water rights and water system of public utility, held under statute authorizing any city to acquire all or part of water-works system that city was authorized to condemn system for use of inhabitants even though properly belonged to company furnishing public service. *North Salt Lake v. St. Joseph Water and Irr. Co.*, 223 Pac. (2d) 577 (Utah, Oct. 18, 1950).

Gambling — Ordinance Requiring License to Conduct Games of Chance Void

In action by taxpayer to enjoin expenditure of tax money in administration and execution of ordinance providing that no person could conduct game of chance without first securing license, held that ordinance was void because it attempted to license gambling. *Kraus v. City of Cleveland*, 94 N. E. (2d) 814 (Ohio App., Oct. 14, 1950).

Housing Authorities—Members of Failing to File Oaths of Office—Offices Become Vacant

In action to restrain defendants from acting as members of Lackawanna Municipal Housing Authority, held that where members of authority failed to file their oath of office their offices became vacant. *Sylvester v. Mescall*, 99 N. Y. S. (2d) 984 (N. Y. App. Div., Sept. 27, 1950).

Intoxicating Liquors—Denial of License To Sell Proper

In mandamus to compel council to issue license to conduct retail beer business, held that where qualified electors, under local option law, voted in favor of not permitting sale of liquors, council could not issue license. *Hughes v. Parish Council of Parish of East Baton Rouge*, 48 So. (2d) 823 (La. App., Nov. 22, 1950).

Parking Lots—Operation of by City a Proprietary Function

In action by community theater patron for injuries sustained by stepping into chuckhole in city-operated parking lot adjacent to theater, held city operated parking lot in proprietary capacity and was liable for injuries. *Rhodes v. City of Palo Alto*, 223 Pac. (2d) 639 (Cal. App., Nov. 9, 1950).

Rent Control—Local Option—City Council Action Legislative

In action for writ of prohibition to restrain city council from making finding under local option provision of Federal Housing and Rent Act, that shortage of rental housing existed in city requiring continuation of rent control, held that action of city council sought to be restrained was legislative and not subject to judicial control. *Gates v. Council of City of Huntington*, 93 Fed. Supp. 757 (U. S. Dist. Ct., S. D., W. Va., Nov. 6, 1950).

Sewage-Treatment Plant—Building of Governmental Function

In action to enjoin construction of proposed sewage treatment plant, held that town had authority to construct plant, that such construction was performance of governmental function, not creation of nuisance per se, and it would not be interfered with by court of equity. *Town of Speedway v. Dugan*, 94 N. E. (2d) 542 (Ind., Oct. 25, 1950).

Sound Trucks—Ordinance Prohibiting Operation of Loud-Speaking Devices Valid

In action to test constitutionality of City of Miami ordinance prohibiting operation on city streets of vehicle upon which mechanical loud-speaking device was attached for purpose of advertising, soliciting or attracting attention, held that ordinance was not unconstitutional as depriving candidate for office of his right of free speech. *State ex rel. Nicholas v. Headley*, 48 So. (2d) 80 (Fla., Oct. 10, 1950).

Streets—Rerouting of Highway As Improvement of Streets

In action to enjoin expenditure of bond proceeds for purchase of right of way for rerouting of highway through streets of City of Denison, held that it was within discretion of city council to say that rerouting of highway was improvement of streets for which bonds were approved by voters. *Clark v. Greer*, 232 S. W. (2d) 876 (Tex. Civ. App., July 21, 1950). *Reh. den.*, Sept. 29, 1950.

Taxation—City Airport in County—Improvements Exempt

In action to recover alleged illegal proportion of taxes levied against city's airport in county, held that raising level of land for use as airport was improvement constructed by city and exempt from taxation, but that city should exhaust administrative remedy before state board of equalization. *City and County of San Francisco v. San Mateo County*, 222 Pac. (2d) 860 (Cal., Oct. 20, 1950).

Tax Exemptions—Church Property Exempt from Special Districts Assessments

In action to remove cloud upon title of realty, held where town created separate districts in order to provide police protection, water, public lighting, and garbage collection service that tax-exempt realty in such districts owned by religious corporation was exempt from special assessments of such districts. *The Rector, Churchwardens, and Vestrymen of Christ Church v. Town of Eastchester*, 99 N. Y. S. (2d) 991 (N. Y. Sup. Ct., Westchester Co., May 19, 1950).

Taxicabs—Railroad Terminal—Ordinance Authorizing All Licensed To Pick Up and Discharge Passengers Valid

Where railroad company sold city site of its terminal station together with all improvements thereon and then leased site from city, held that railroad was not authorized to enter into contract with one taxicab company giving it exclusive right to solicit and pick up passengers and that city ordinance allowing all properly licensed taxicabs to pick up and discharge passengers at terminal was valid. *Illinois Central Railroad Co. v. City of New Orleans*, 93 Fed. Supp. 229 (U. S. Dist. Ct. E. D. La., Aug. 25, 1950).

Trash—Injuries—Burning of Governmental Function

In action to recover damages caused when three-year-old child fell into incinerator in which trash was being burned by school employees, held that board of education was immune from liability since it was acting in governmental capacity. *Bingham v. Board of Education of Ogden City*, 223 Pac. (2d) 432 (Utah, Oct. 25, 1950).

As never before, overall national economy demands greater durability of all road maintenance materials. The road tested and proven durability of Prismo products fully answers this demand. Prismo's crystal clear spheres held in a "bull dog grip" by a strong plastic binder maintain reflective brilliance for longer periods despite heavy traffic and adverse weather conditions.

Prismo Laboratories' technicians are constantly seeking improvements in both materials and methods of application of Prismo Products. The result of this research is the constant improvement of Prismo Products, making possible new economies in reflective material application and maintenance.

Economy minded road engineers will find it budget wise to write for further information on Prismo Products.

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Traffic Control and Facilitation

Rapid Transit Comes to Cleveland

WHEN Clevelanders speak of "rapid transit" they refer to a main east-west off-street transit route that would relieve downtown congestion and the load on street-surface transit facilities, like New York's subways and Chicago's elevated.

This is the year the dream is expected to move toward reality. Construction is scheduled to start on a 13-mile private-right-of-way rapid-transit line. The subject is summed up here and described in greater detail by the Ohio Brass Company, of Mansfield, Ohio, in its *Traction News* for January 1951.

In October 1949, the voters of Cleveland approved a charter amendment that cleared the way for a $22,200,000 RFC loan for modernization of the Cleveland Transit System. An allocation of $16,000,000 was made for the construction of the rapid-transit line, the remainder going for new equipment and loop and storage facilities for trackless trolleys and buses.

Designed Without Steps

The rapid-transit cars will be designed without steps for level loading at station platforms, using an overhead pantograph system of current collection. Seventy-five cars, equipped with automatic couplers, will provide 20 trains an hour in one direction during the rush periods.

CTS is considering the practicability of doing away with all but three streetcar lines, and of eventually selling their PCC cars and replacing them with trackless trolleys and buses.

Showing the people that rapid transit meant improved service over all the system was the key to the success of the charter amendment vote in 1949. City officials found themselves confronted with the problem that many of the people who had to vote for the amendment—the citizens of Cleveland—would not benefit directly from the rapid transit. To them it looked like a move to provide better transportation for suburbanites. These voters had to be shown how rapid transit would not only improve local service by diverting riders to the rapid transit, but would also ease the growing burden of traffic-choked arterial streets.

One of the sales arguments was that main-line service was to be provided by quiet, comfortable, curb-loading trackless trolleys.

Trolley coaches eventually will be installed on at least 18 of Cleveland's main transit routes. They now operate on 11 lines, two having been added since the charter amendment was approved in October 1949.

The pattern of service for Cleveland's new transit system is taking definite shape. Rapid transit will provide high-speed, off-street travel for east-west passengers. Motor buses will provide feeder service and fast express service into areas not conveniently tapped by rapid transit. Trolley coaches will also do some feeder work.

Car-Travel Time Cut One-Third On Two New York Avenues

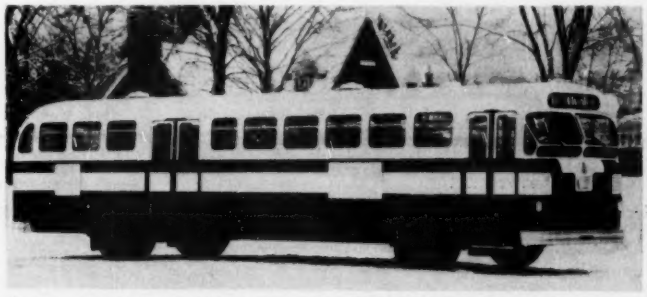
WITH the completion of adjustments in the timing of the progressive traffic-signal systems on Ninth and Tenth Avenues, New York City, the vehicular-travel time on these two major north and south avenues in Manhattan has been reduced by one-third, a survey just completed by the Department of Traffic reveals. Ninth Avenue now carries 15,000 vehicles per day, and Tenth Avenue 18,000 vehicles.

Progressive signal timing was first placed in operation on Ninth and Tenth Avenues, already operating as one-way streets, on July 10, 1950. The signals are now set for 22 miles per hour.

The new signal timing is resulting in important reductions in congestion on cross streets. The long lines of cars waiting to cross Ninth or Tenth Avenues have been practically eliminated. For example, the number of cars stopped on 57th Street, between Ninth and Tenth Avenues, was reduced by 33% and the delay by 60%. It was achieved by reducing the signal cycle from 90 seconds to 60 seconds, making red and green periods shorter and oftener. An additional important effect of this shorter cycle and waiting period has been an improvement in the observance of traffic signals by pedestrians.

The tests have proved that it is necessary to provide signal controllers which change the timing automatically several times each day in accordance with the changing traffic needs [said Commissioner of Traffic, Lloyd B. Reid]. A requisition has been placed for 1,100 such controllers, as recently authorized by an appropriation of $450,000 by the Board of Estimate. This will enable us to carry out the first half of the Department of Traffic's Signal Operation Plan for Manhattan. The experience on Ninth and Tenth Avenues has proved conclusively that the plan is practical and will result in a major reduction in congestion in Manhattan.

550 Propane Buses for Chicago



At the rate of 10 to 15 buses a week, Chicago Transit Authority's fleet of 500 odorless, propane-fueled, 51-passenger buses are traveling overland from the Twin Coach factory at Kent, Ohio. Propane for fueling the buses is being provided by the Phillips Petroleum Company under a five-year contract at varying prices, ranging from slightly more to slightly under 9 cents per gallon. Fifty more propane buses, 44-45-passenger capacity, were purchased in January 1951 from the A. C. F. Brill Company, of Philadelphia, for early delivery.

CHICAGO PLACES RECORD ORDER for TROLLEY COACHES

Trolley coaches and Chicago are old friends—and good friends too!

When this record-breaking order of 349 new coaches is delivered, Chicago will be the biggest operator of these modern electric vehicles in the country.

Successful experience played a major part in CTA's decision to order this record number of electrics. This experience dates back more than 20 years—back to the pioneer days of trolley coach operation.

But, the "pioneer" days are long since gone. Today trolley coaches, combining the best features of electric vehicles and motor buses, are operating successfully in 67 cities throughout the country. ***General Electric Company, Schenectady 5, N. Y.***

GENERAL ELECTRIC

Special Metering In Saskatoon

SASKATOON, Saskatchewan, gets so cold in winter that parking-meter violations don't count. In fact, there aren't many cars downtown in the winter. Even in the warmer months there is no limit to the number of nickels that one parker deposits. Installed in midsummer of 1950, revenues in eight weeks averaged $9.36, or $1.17 per week per meter. The 257 meters are twins designed by the Ontario Hughes-Owens Company, Ottawa.

Particularly special is a plug-in attachment on 18 of the parking meters for heating automobile motors in winter. The idea belongs to Mayor J. S. Mills. An extension cord from the heater element, with which 80% of the cars are equipped, is plugged into the city-lighting circuit by way of the meter standard. The service is included with the parking charge. The hourly electrical cost to the city is half a cent. These metered heated parking spaces are expected to be very popular with the people of Saskatoon.

Improving Traffic Flow In Our Cities

HERE'S HOW Portland, Ore., boosted the traffic speeds in its downtown business district from 6 to 15 miles an hour. Under the direction of Fred T. Fowler, City Traffic Engineer, a one-way grid plan covering 21 miles of streets was put into operation this year. In addition to proving its technical value, the plan has won public favor.

The changeover was accomplished in two steps. First, the north-south avenues were marked for three moving lanes, assigning two to the direction of future one-way movement, and one to the opposing traffic. Signals were retimed for a 15-mile-per-hour progression in direction of future travel. Travel in the correct direction was made so advantageous that drivers quickly became accustomed to picking a route conforming with the one-way grid movement. After this advance training, the second step of actual changeover to one-way traffic was made without confusion.

On the first day of operation, the police department assigned 128 officers to strategic intersections within the grid, but they were returned to their regular duties after three days when it was evident that little confusion had resulted from the change.. Portable signs were placed on the streets at each intersection to augment the three permanent one-way signs, one on each of the far corners, and an illuminated one overhead. The portable signs were removed after one month.

Buses were substituted for street cars, and bus stops were established on a skip-stop basis at left-turn intersections only, to eliminate interference with private vehicles turning right, and transit vehicles going straight through the same lane. The new traffic pattern placed large volumes of traffic on previously minor streets. Plans call for early installation of signals of 26 additional intersections. The greater ease with which motorists can drive through the downtown business area has resulted in traffic-volume increases ranging from 5 to 105% on various streets, according to Mr. Fowler.

FRANKLIN M. KREML
Director of the Traffic Institute, Northwestern University, and of the Traffic Division, International Association of Chiefs of Police

Metered Parking at Savannah Beach, Ga.

Writes Anton F. Solms, Jr., Town Attorney, Savannah Beach, Ga.: "Parking at Savannah Beach was solved by the installation of 698 meters of the 12-hour automatic type made by the Dual Parking Meter Company, of Canton, Ohio. A vista of them is shown here in early morning before the arrival of bathers."

Bob Mitchell Becomes Consulting Engineer

ROBERT A. MITCHELL, for many years Traffic Engineer of Philadelphia, Pa., has joined the staff of Gannett, Fleming, Corddry and Carpenter, Inc., of Harrisburg, Pa., where he will head up the firm's traffic-engineering division.

Instead of reporting some of his practical accomplishments second hand, THE AMERICAN CITY asked Bob to tell the story.

Robert A. Mitchell

I was one of the first operating traffic engineers [he writes] to see the value of Scotchlite for traffic signs, and Prismo traffic paint, using them exclusively from the time they came on the market. I am still waiting for someone to produce a satisfactory, permanent pavement marker. Having assisted several manufacturers, in an advisory capacity, to develop such markers, it has been a disappointment to find that they can't seem to stay in business even after they produce a worthwhile product. We have several markers in use in Philadelphia that have been down for seven or eight years, but they are not manufactured any more.

Someone might dispute my assertion that I originated the four-phase traffic-signal system for streets with two- and three-way intersections, but I do not know of this system being used until I designed it for the Benjamin Franklin Parkway in Philadelphia. Prior to that, two- and three-phase traffic controllers were about the limit in use.

Orderly, Dual-controlled parking in Soldiers' Square, Appleton, Wis.

Another city—*(Appleton, Wis.)* solves them with DUALS!

LIKE so many progressive communities, Appleton, Wisconsin, turned to Dual Automatic Parking Meters to solve traffic control and parking problems. That was in 1949, when 600 Duals went to work. They performed so well that 60 *more* have been installed.

Motorists and merchants alike in Appleton will tell you that Duals make parking easier and better—fair to all . . . faster turnover. It's easy to see why. Duals operate simply, automatically, dependably—whatever the weather.

Moreover, Dual *gearshift* meters provide for *flexible* parking control; time and coin conversion can be made as conditions require, *on the spot.* And Duals have a long-standing record for low maintenance that helps make budget reports pleasant reading.

If your community is planning metered parking facilities, get the facts about Duals' many advanced operating features. You'll see how Duals can help you in many *extra* ways. Send for Bulletin DU-504 for on-street parking; Bulletin DU-505 for off-street parking.

THE DUAL PARKING METER COMPANY
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. . . YOUR BEST ANSWER TO EVERY PARKING PROBLEM

400 New Parking Meters On Seal Beach, Calif.

EARLY in August 1950 we installed about 400 Voglesong Turret parking meters on our municipal parking lot on the beachfront. The rates are one quarter for three hours, two for six hours, and three quarters for nine hours. Before the meters were installed, an attendant handled a straight charge of 50 cents for parking. We are still limited here in the matter of parking facilities and are considering putting more parking lots on our beachfront.

FRANK L. SHUFELT
Mayor
Seal Beach, Calif.

Instead of a flat-rate charge of 50 cents, Seal Beach, Calif., now has Turret parking meters that permit three hours of parking for a quarter.

Greensboro, N. C., Experiments with An Honor System Parking Lot

By EUGENE MILLER
Greensboro, N. C.

CITY MANAGER JAMES R. TOWNSEND, of Greensboro, N. C., has come up with a new wrinkle in the way of municipal parking lots — an honor system parking lot that began operation in November 1950.

Instead of the 73 parking spaces in the lot being individually metered, the motorist using the lot estimates the number of hours he will park, and pays the charges when he enters. If he parks beyond the time originally estimated, he pays the additional charges when he leaves. A small, metal coin-box is located at both entrance and exit, and Vendo coin-changing machines are nearby. The parking rates are stated on a large sign on the lot and repeated on smaller signs in front of each parking space.

City Manager Townsend points out that "an honor system lot saves the city the expense of installing some $3,500 in parking meters, it eliminates the expense of checking and repairing meters, and also cuts down on the number of hours needed to police the meters." Incidentally, this lot is located three blocks from the nearest principal business street, which explains the low rate scale shown in the table.

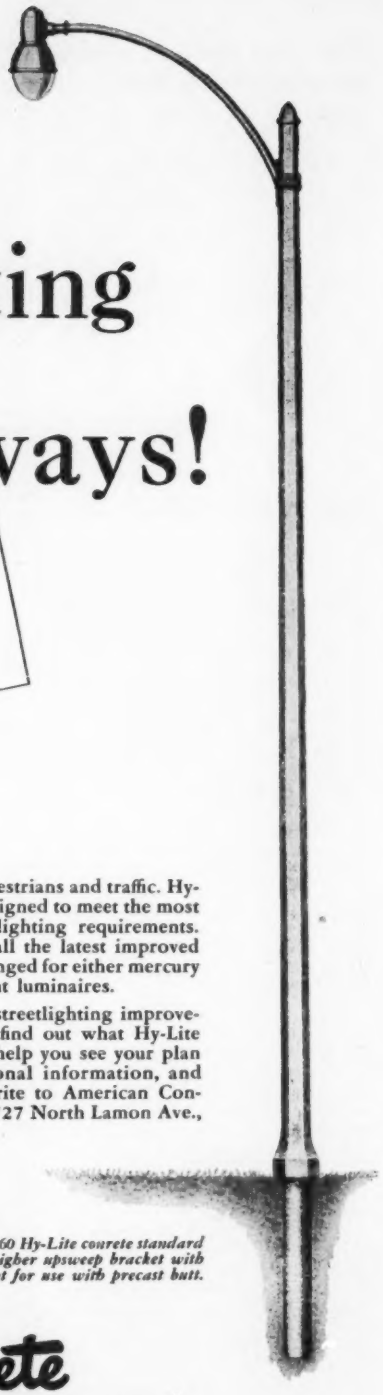
In addition to the honor system lot, Greensboro owns six other parking lots, of which four are now in operation, with three of them metered. The three metered lots provide accommodations for 143 cars and are served by Magee-Hale Park-O-Meters. The fourth lot, which is free, provides parking for 400 cars near the city's War Memorial Stadium. The table shows comparative revenue facts.

	Capacity	*Rates*	*December 1950 Revenue Total*	*Per space*
1 (honor)	73	5 cents, 2 hours; 10 cents, 2-4 hours; 15 cents, 6 hours; 20 cents, 6-8 hours; 25 cents, 10 hours;	$158	$2.18
2 (metered)	53	5 cents, 1 hour (with a 5-hour limit). Lot open from 8 a.m. to 6 p.m.	496	9.36
3 (metered)	46	5 cents, 1 hour (with a 5-hour limit). Lot open from 8 a.m. to 6 p.m.	213	4.63
4 (metered)	44	5 cents, 1 hour (with a 5-hour limit). Lot open from 9 a.m. to 11 p.m.).	311	7.07
5 (free)	400	Open all the time	....	.....
6 (not yet in operation, approx.)	40	Not yet determined	....	.....
7 (not yet in operation, approx.)	44	Not yet determined	....	.....

The Greensboro "honor system" parking lot for 75 cars. Motorists are put on their honor to pay the required parking charges when entering or leaving.

Safety Lighting that saves 3 ways!

WITH HI-LITE CONCRETE STANDARDS



WITH critical materials harder to get, and increased costs harder to meet, see how you can make important savings with modern Hy-Lite standards.

FIRST . . . SAVE on installation costs. These Hy-Lite standards are furnished with their own foundation, spun as an integral part of the standard. Saves cost of anchor rods and cast-in-field foundations.

SECOND . . . SAVE critical metals. These Hy-Lite standards of durable reinforced concrete require only *one-third* the metal otherwise needed.

THIRD . . . SAVE maintenance costs. These Hy-Lite standards have an attractive water-polished granite finish for low upkeep.

Just as important as these savings, are the *gains* in safety for pedestrians and traffic. Hy-Lite standards are designed to meet the most modern safety streetlighting requirements. They conform with all the latest improved practices and are arranged for either mercury vapor or incandescent luminaires.

So check on your streetlighting improvement program—and find out what Hy-Lite standards can do to help you see your plan through. For additional information, and dimensional data, write to American Concrete Corporation, 4727 North Lamon Ave., Chicago 30, Illinois.

This Design No. 660 Hy-Lite concrete standard features a new, higher upsweep bracket with shorter pole height for use with precast butt.

American Concrete

CENTRIFUGALLY SPUN-GRANITE CONCRETE LIGHTING STANDARDS

Outdoor Lighting

New Lighting on Oahu

By WILLIAM STEPHENSON
Superintendent
Division of Street Lighting
Honolulu, Hawaii

STREETS in the City and County of Honolulu are lighted primarily by incandescent street lights with power supplied by a public-utility company. In 1949, however, the City and County of Honolulu embarked on a program of using the General Electric OV-20 and No. 109 mercury-vapor luminaires along Honolulu's major thoroughfare, King Street, where traffic is heaviest. In 1949 and 1950, 210 mercury-vapor luminaires were installed.

Compared to the original high-intensity lighting installed in these areas many years ago, the new lights give three or four times as much effective lighting on the pavement. The unbroken chain of these lights has given motorists greater visibility and has enhanced the value and beauty of King Street. A similar installation will be made on Beretania Street, the second largest main thoroughfare within the city.

In addition to the mercury-vapor lights, approximately 10,000 incandescent street lights illuminate the city proper. It is the city's aim to replace the old fixtures with modern luminaires. The first steps were installations of 620 and 800 G-E 79-R luminaires with Holophane refractors.

The suburban or rural areas are lighted by approximately 2,500 street units. The replacement of the incandescent fixtures by 400 suburban luminaires in 1949 and 500 in 1950 has not only promoted safety and convenience after dark, but has greatly increased the attractiveness of the areas. It is the aim of the present administration to establish an adequate street-lighting program for the entire rural area.

On all street-lighting projects for subdivisions, the city and county assume one-third of the cost and the subdivider assumes two-thirds. In 1949 and 1950 the Division of Street Lighting accepted plans for street lights in 30 subdivisions.

Street-lighting equipment and materials for installation of new street units in 1949 cost the city government $74,953 and an additional $47,791 for salaries and wages for 18 full-time employees assigned to this project. In 1950 the city spent $80,000 for new lights, with the salary figure remaining the same. Upkeep of the system costs $245,814. Of this total, $41,639 was spent for materials, supplies, and incidentals, and $115,084 for salaries and wages for 42 full-time employees. The 1950 expenditures for up-keep closely resembled 1949 costs. Current purchased in 1949 for the city street-lighting system amounted to $75,093 and for the county districts $13,996. Current purchased for the city in 1950 totaled $85,000 and for the rural districts $17,000.

Chief Engineer Karl A. Sinclair, a G-E mercury-vapor luminaire, and author.

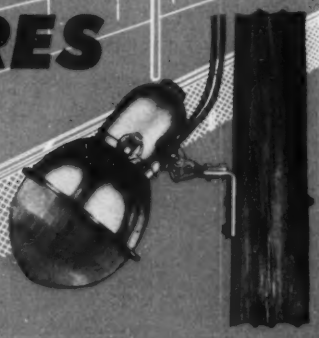
Philadelphia Now Owns Over Nine Miles of Mercury-Vapor Lights

SINCE World War II an extensive city-state highway system has been constructed in Philadelphia, Pa. To light these arterial highways properly, Philadelphia decided to use mercury-vapor lighting and the first city-owned and city-maintained lights were installed on Vine Street, near the approaches to the Delaware River Bridge. This initial project was news and was celebrated by a dinner tendered city officials by the Westinghouse Electric Corporation, and described in THE AMERICAN CITY for April 1949.

As the Vine Street improvement has progressed to the western section of the city, the mercury-vapor system has expanded. A Hunting Park Avenue underpass on U. S. Highway No. 1 under Ridge Avenue, similarly lighted, is considered by many to be one of the best examples of underpass lighting in the United States. Then on January 23, 1951, mercury-vapor lighting on nine miles of city-state arterial highways was turned on by Mayor Bernard Samuel. These highways are located in southwest Philadelphia and are the approaches to the Philadelphia International Airport. The lighting is provided by 496 G-E mercury-vapor luminaires of 20,000 lumens each, mounted on 32-foot Pfaff and Kendall aluminum standards, with 12-foot brackets, and costing $402,000. All wiring is underground, in ducts and buried cable.

Except for these mercury-vapor units, nearly all of the city's street lighting is owned and maintained by the Philadelphia Electric Company. The Company recently completed a detailed study of the requirements for modern-

DEFENSE PLANT LIGHTING with JOSLYN LUMINAIRES

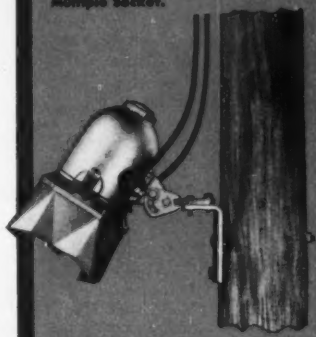


Enclosed Wedge Bond Luminaire for I.E.S. Type I Light Distribution for 2500-10,000 L. Lamps.
Catalog No. J07079-F with Series Receptacle and Socket.
Catalog No. J07279-F with Mogul Multiple Socket.

Fence and yard lighting will be simplified by using Joslyn luminaires mounted on 2-way adjustable brackets (or on standard pipe brackets, if desired for vertical mounting).

You can obtain all the advantages of scientifically designed protective lighting units at moderate expense. Some of the advantages of Joslyn luminaires include:

1. Most effective light control—I.E.S. Type I light distribution beamed at an angle effectively illuminates a maximum linear distance along a protective fence and throws sufficient light on inside and outside areas to illuminate any intruders.
2. Enclosed moisture-proof, dust-tight luminaires, or 18-8 Stainless Steel Open Reflectors—either type requires a minimum of maintenance.
3. Durable construction throughout; designed and manufactured to do an efficient job of lighting vital outdoor areas.
4. Adjustable pole mounting bracket shown in photographs is made of hot galvanized, malleable iron; it can be tilted 30 degrees up or down, and 30 degrees to right or left of central position.



18-8 Stainless Steel Permalux open Luminaire for I.E.S. Type I Light Distribution for 2500 L. Lamps.
Catalog No. J07071-I with Series Receptacle and Socket.
Catalog No. J07371-I with Medium Multiple Socket.

Branch offices in principal cities

THE JOSLYN CO
THE SOUTH EAST JOSLYN CO
SOUTHERN JOSLYN CO
JOSLYN SOUTHWEST CO
JOSLYN PACIFIC CO

JOSLYN MFG. AND SUPPLY CO.

Complete Pole Line Equipment

30 NORTH WACKER DRIVE, CHICAGO 6, ILL.

Functional aluminum standard designed by Pfaff & Kendall for the 20,000-lumen G-E mercury-vapor luminaires on Philadelphia's newly lighted access highways. The fixtures are mounted at 32½ feet on 12-foot tapered elliptical arms without tie-rod sway braces, and are particularly easy to erect. The seamless standards are set 100 feet apart and staggered, with wiring underground. The 500 standards, which are not painted, are expected to weather to a silver gray.

ization of the system. This report, which was approved by city lighting officials and the City Council, calls for capital expenditures by the utility company of $1,000,000 each year for the next 15 years. The 1951 city street-lighting budget of $2,350,000 includes an additional $100,000 over 1950 to cover this plan for the first year.

In 1951 it is planned to modernize the lighting on 5½ miles of Broad Street, Chestnut Street from the Delaware to the Schuylkill Rivers, and on 25 miles of main streets.

It is expected that the annual per capita cost of electric street lighting will rise from the present figure of $1 to about $1.90 in the 15 years. During that time the lumens on the streets will increase four-fold from 42,500,000 to 179,000,000.

HAROLD E. MASON
Illuminating Engineer
Department of Public Works
Philadelphia Pa.

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Gas Lamps Disappear from Nahant, Mass.

THE 63 gas lamps in the residential section of the seacoast town of Nahant, Mass., have been replaced by 61 modern incandescent luminaires, supplied by the General Electric Company, with 2,500-lumen lamps on 6-foot upsweep brackets 21½ feet high.

In 1915, the town fathers' first effort to replace the old gas lights was defeated by influential residents who argued that the lamps were ornamental and lent a certain beauty to the town. However, low candlepower and increased traffic made continuation of their use dangerous. The new luminaires provide about five times more light on the street than the gas lamps.

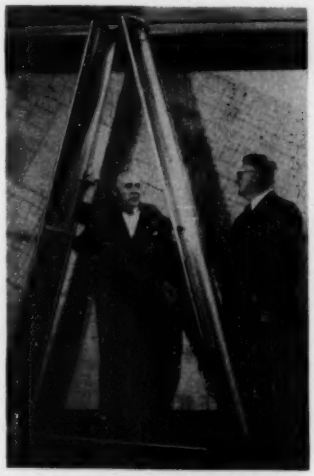
Collectors of antiques have flooded the town with requests for the old lamp posts, being sold at their scrap value.

Fluorescent Lights in Detroit

FOR the people who walk and drive at night, the advantages of fluorescent street lighting are its beauty, its comparative lack of glare, its quick and comfortable visibility.

For the taxpayers, a decided advantage is that fluorescent tubes rated 4,000 hours are more likely to last 8,000 hours, against the 1,650 hours guaranteed and the 2,000 hours which make up the average life of incandescent lamps.

For the drivers and pedestrians, fluorescents provide a more even distribution of light on both wet and dry pavements. With 8-foot luminaires on both sides of the street, the pavement brightness is particularly uniform, even better on wet pavements than on dry. This was never the case with any other type of street lighting.



Above: the man at the right is M. C. Talentino, General Electric Lighting Specialist, with Louis J. Schrenk, Superintendent of the Detroit Public Lighting Commission. Mr. Schrenk says that if maintenance costs of the installation, including fixture maintenance and tube life, keep total maintenance costs in line with incandescent-system costs, there will be lots more fluorescent street lighting in Detroit. Below: Wyoming Avenue, Detroit, lighted by new fixtures composed of two aluminum units containing two 8-foot fluorescent tubes each.

"The Best Lighted Streets In the Commonwealth of Virginia"

By ARTHUR S. OWENS
City Manager
Roanoke, Va.

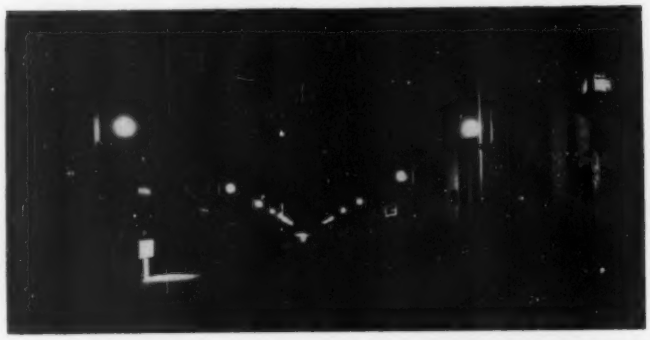
ABOUT a year ago, the City Council of Roanoke, Va., decided to negotiate for a new lighting system for our main business streets, and we set as our objective "the best-lighted streets in the Commonwealth of Virginia." To achieve this high resolve we selected the 21,000-lumen mercury-vapor lamp made by the Westinghouse Electric Corporation.

While we have had this sparkling new lighting system for only nine months—too short a period to accumulate traffic-safety and other records—we know we have derived numerous benefits from it. Pride, on the part of both merchants and citizens, was immediately stimulated. Our streets are cleaner, more dressed up. Crime, and the tendencies toward it, are greatly deterred in the area—a fact readily attested to by our Police Department.

Equally important to us is the dignified appearance of our streets, the result of a "code" mounting height of over 30 feet on Union Metal steel poles. I may add this is a welcome change from the former "low-ceiling" effect. Then, too, even without statistics we know these streets are safer streets, as the abundant light is an effective safeguard for motorists and pedestrians at night.

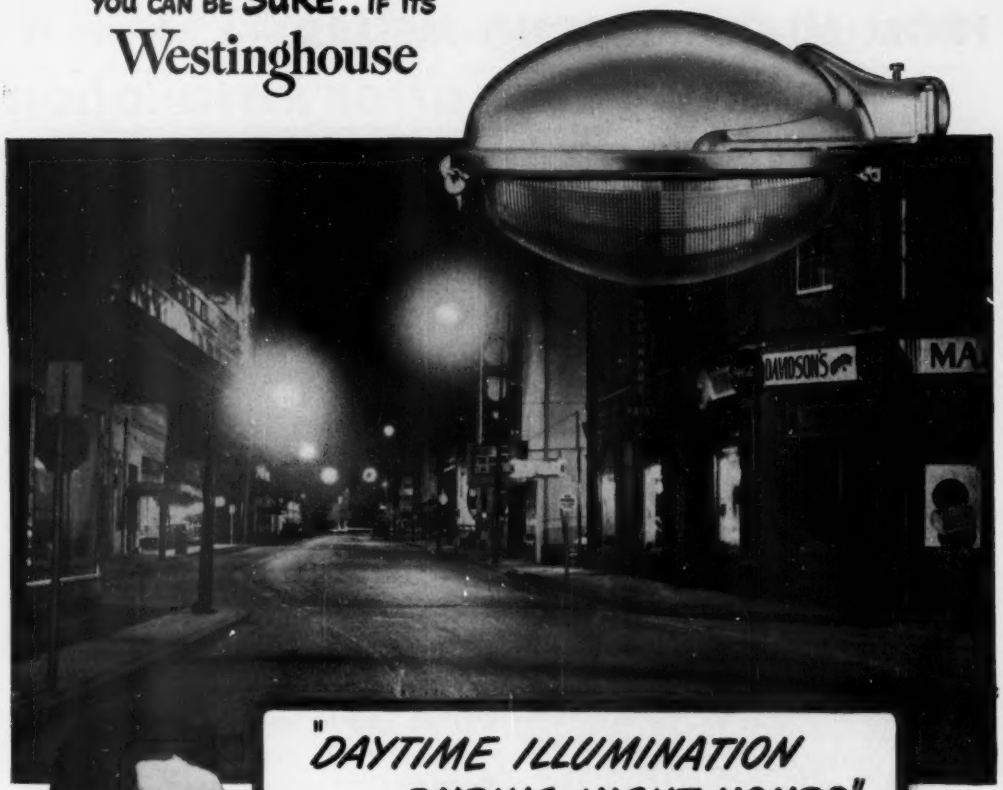
The City Council and our progressive citizens have been so elated over the new street lights that the Council has ordered a sizable extension of the original installation, to equip the secondary business streets. We believe that the universally favorable response to this type of lighting will lead to the installation of many similar units on our arterial approaches, bridges, and viaducts.

A well-lighted business street is certainly a great asset to a growing community.



Before and after views of this installation, about which the author says: "Roanoke's progressive citizens and city officials take great pride in this, the first large-scale application of truly modern white-way lights in the southeastern part of the country."

YOU CAN BE **SURE**.. IF IT'S
Westinghouse



"DAYTIME ILLUMINATION DURING NIGHT HOURS"

"When the City of Houma considered the illumination of its main thoroughfare, it selected the OV-20... Now that our project is completed, our citizens are proud of the daytime neatness of our Main Street with the 'daytime' illumination during the night hours", writes Mayor Leon Gary of Houma, Louisiana.

He points out results by further stating, *"Our merchants are capitalizing on the fine details obtainable in window displays under the Mercury Vapor Lighting system".*

Not only business results, but added protection, he states, *"Our Police Department is enjoying an easier task from the bright illumination of our high value mercantile area".*

To sum it all up, *"Frankly, it has been the most popularly accepted of the many projects of our administration".*

This could be your town. Want proof?

Don't take our word for it. Write Mayor Gary about the new street lighting in his town.

Or better yet, go see the City of Houma. Seeing for yourself is real proof. J-04278-A

There's Danger in Darkness . . . but Safety in Light

Westinghouse
PLANNED LIGHTING SYSTEMS

here's what you can expect
FROM MI-CO PARKING METERS
many years after installation

Report from NEW ROCHELLE, N. Y. 700 MI-CO Meters (installed in 1940) produced $200,259 in revenue for the five years 1943 to 1947. And still producing as well.

From BRIDGEPORT, CONN. 1100 MI-CO Meters (installed in 1941) produced $330,800 during the same five-year period. These meters still going strong. From WATERTOWN, N. Y. 500 MI-CO Meters installed in 1941) earned $37,000 in 1946—five years later. They report that maintenance cost is very low. Meters still giving exceptional service. From MANSFIELD, OHIO Meters installed late in 1940. In five years—1941 through 1945—425 meters earned $204,095. Cost of repairs averaged $50 per year for the entire lot. In 1949 Mansfield reported an average income of $107.84 per meter for the year from 458 meters. Most of them almost 10 years old.

From LOCKPORT, N. Y. 330 MI-CO Meters (installed June 1942) earned $127,784 in 59 months. Average expense of repair parts, 29c per meter per year.

SEE REGULATIONS ON OTHER SIDE
INSERT ONE COIN AT A TIME
TURN HANDLE TO STOP AFTER EACH COIN
FREE PARKING ON SUNDAYS
MI-CO METER

We'll be glad to send you other reports which prove the dependability of MI-CO Meters over long periods of years.

Remember, most meters perform well for a few years. But keeping them operating for five or ten years may cut deeply into their earnings. Or they may have to be replaced altogether. Be sure to check carefully the longevity record of the meters you are considering.

There's no point in buying a two- or three-year meter when you can get a ten- or more-year meter for the same or less money.

Get all the facts. Then decide.

MI-CO METERS, 231 Court St., Covington, Ky.
Division of The Michaels Art Bronze Co., Inc.

Recent City Manager Appointments

The following portraits are of city managers whose appointments have been announced in preceding issues of *The American City*

E. E. Kelley, Jr.
Lakeland, Fla.

Walter Hahn, Jr.
Monterey, Calif.

R. Powell Black
Jasper, Ala.

Bernard J. Brungardt
Hays, Kans.

Jay F. Gibbs
Port Huron, Mich.

Santa Paula, Calif., has appointed its first manager. He is GEORGE AIASSA, formerly assistant manager at Santa Rosa, Calif.

R. G. BACKMAN has moved from Shelbyville, Tenn., to take EDMUND W. MEISENHELDER'S place as city manager of Fernandina, Fla.

J. J. DAVIS is acting city manager for Quitman, Ga.

CHARLES M. DIXON has been appointed manager by the City of Moultrie, Ga. He replaces WILLIAM F. LADSON.

ERNEST ETHIER is now the manager of Sylvan Lake, Mich.

Harbor Springs, Mich., appointed HOWARD GOHLKE to take HAROLD K. SCHONE'S place as manager. Mr. Gohlke resigned as manager of Rogers City, Mich., to accept the appointment.

Westmount, P.Q., Can., appointed THOS. J. HUGHES general manager when PERCY E. JARMAN retired on December 31. Mr. Hughes had been acting manager while Mr. Jarman was on leave.

EDWARD MCKENNA JOHNSON, assistant director of the Department of Public Administration at the University of Mississippi, has been appointed the first manager of Grenada, Miss.

A. PAGE LOCKARD left the managership of Salem, W. Va., to replace HARRY CURRY as manager of Grafton, W. Va.

W. T. LOMAN has been appointed to fill the city manager position at Midwest City, Okla., left vacant by R. K. MCMULLEN.

H. B. LOVVORN is now manager of Cedartown, Ga. Mr. Lovvorn was secretary of Cedartown, and was appointed to succeed L. W. TURNER, who died suddenly on December 21, 1950, following a short illness and operation.

JACK MAYNARD, who has been city agent for Nicholasville, Ky., has accepted an appointment as city manager of Ashland, Ky.

Hanford, Calif., has appointed GEORGE M. MINTURN, city engineer of Palm Springs, Calif., to succeed WALTER J. HOPKINS. Mr. Hopkins passed away on December 30 after serving as the first manager of Hanford for only two months.

Shawnee, Okla., has appointed one of its businessmen, WILLIAM B. MORAN, to succeed S. CONGER BROWN as city manager.

W. E. ROUTH is the acting city manager for Temple, Texas. He succeeded A. E. TAYLOR.

E. L. SCHORNICK, a businessman of Cleveland, Okla., is the new manager of that city. He replaces J. D. CHEEK.

EUGENE A. SMITH is the acting city manager for Surfside (Miami Beach), Fla.

The first manager of Baker, Ore., is G. S. VERGEER, who was formerly manager of Milton, Ore.

MAYNARD WELCH has come from Rutland, Vt., to be the first manager for the Town and Village of Poultney, Vt.

New York Association of Towns Holds Well-Attended Meeting

MORE than 2,500 town and county officials of New York State braved the railroad strike and winter weather to register at the annual meeting of the Association of Towns, held at the Hotel Statler, in Buffalo, February 6-8. The general sessions and the group meetings for various local officers shared interest in several key topics, particularly civil defense and the proposed New York State legislation on this subject. The proposed New York State Building Code, zoning, pollution abatement, and highway and traffic problems were some of the other areas of common concern to the officials present.

A number of high-ranking state officials impressed the local government representatives with their community responsibilities in civil-defense affairs, and urged their cooperation in the comprehensive program which is being worked out for the entire state.

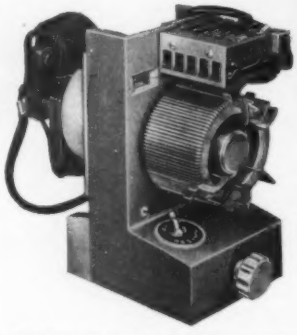
Highlight of the conference was a two-act model town-board meeting, written and directed by Lieutenant Governor Frank C. Moore, of Buffalo. The cast of 15 persons, including Mr. Moore as town attorney of mythical Pottersville, reviewed topics such as real-estate assessments, state aid to libraries, building codes, town-state welfare cooperation, and civil defense.

New officers of the association, who will take office May 1, are:

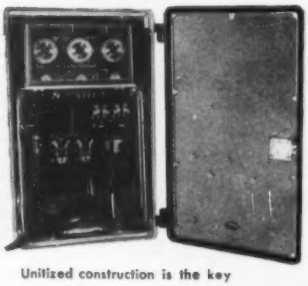
President, Albion Volk, Superintendent of Highways of the Town of Orangetown, Rockland County; *Vice-Presidents*, Ned F. Langdon, Justice of the Peace in the Town of Yates, Orleans County; Walter E. Lansing, Town Clerk, Town of DeWitt, Onondaga County; John L. Delius, Town Attorney, Town of Mamaroneck, Westchester County; Gordon A. Howe, Supervisor, Town of Greece, Monroe County; Roland J. Pettit, Supervisor, Town of Hounsfield, Jefferson County; *Treasurer*, Edward F. N. Uthe, Town of Coeymans, Albany County. Honorary president is Lieutenant Governor Moore; and honorary vice-presidents are S. Wentworth Horton, State Senator from Suffolk County, and John H. Cooke, who is the State Senator from Erie County.

The Controller that grows with traffic!

You can convert a one-dial controller to two dials by just plugging in the second dial unit and its latch relay.



Each dial unit has its own synchronous motor, timing gear, dial contacts and timing keys.



Unitized construction is the key note of this new design controller—thus major parts can be readily replaced for servicing in a matter of minutes.

This is General Electric's new expansible controller. Buy it as a one-dial unit. Use it with or without interconnection. As traffic volume builds up or as conditions change just plug in a second dial unit—or a third. That's how easy it is to keep your traffic-control system growing with traffic!

This new traffic controller is a finer piece of equipment mechanically and electrically—as well as completely new in design. It greatly simplifies your planning and buying; it increases reliability and cuts maintenance. Let your nearest G-E Apparatus Sales Office or traffic control distributor show you how. Apparatus Department, General Electric Company, Schenectady 5, N. Y.

GENERAL ELECTRIC

Conventions — When and Where

Conventions listed this month for the first time are indicated by an asterisk (*).

March 6-9—Atlantic City, N. J.
ASSOCIATION OF HIGHWAY OFFICIALS OF THE NORTH ATLANTIC STATES (Hotel Traymore). Sec., A. Lee Grover, State Highway Dept., 1035 Parkway Ave., Trenton, N. J.

March 9-11—Washington, D. C.
AMERICAN SOCIETY FOR PUBLIC ADMINISTRATION. Annual Meeting (Hotel Statler). Sec.-Treas., Laverne Burchfield, 1313 E. 60th St., Chicago 37, Ill.

March 11-15—College Station, Texas
TEXAS WATER AND SEWAGE WORKS ASSOCIATION. Annual Meeting (Texas A. & M. College). Exec. Sec., V. M. Ehlers, Director, Bureau of Sanitary Engineering, State Health Dept., Austin, Texas.

March 12-14—Milwaukee, Wis.
AMERICAN ROAD BUILDERS' ASSOCIATION. Annual Meeting (Hotel Schroeder). Pres., E. R. Needles, International Bldg., Washington, D. C.

March 13-15—Grand Rapids, Mich.
MICHIGAN HIGHWAY CONFERENCE. Annual Meeting (Hotel Pantlind). Bus. Mgr., A. O. Cuthbert, 120 Ottawa St., Lansing, Mich.

March 14-16—Atlantic City, N. J.
NEW JERSEY SEWAGE AND INDUSTRIAL WASTES ASSOCIATION. Annual Meeting (Hotel Chalfonte-Haddon Hall). Sec.-Treas., Michael S. Kachoraky, 345 No. Eighth Ave., Manville, N. J.

March 15—Boston, Mass.
AMERICAN WATER WORKS ASSOCIATION—New England Section. Annual Meeting (Hotel Statler). Sec., G. G. Bogren, Weston & Sampson, 14 Beacon St., Boston 8, Mass.

March 18-20—Chattanooga, Tenn.
SOUTHERN ASSOCIATION OF CHAMBER OF COMMERCE EXECUTIVES. Annual Convention. Sec.-Treas., Floyd Kay, Charlotte, N. C.

***March 19-20—St. Louis, Mo.**
NATIONAL HOUSING POLICY CONFERENCE. Annual Conference (Jefferson Hotel). Exec. Sec., Fred Hume, Jr., care of Jefferson Hotel, St. Louis 1, Mo.

March 26-29—Lafayette, Ind.
PURDUE ROAD SCHOOL (Union Bldg., Purdue University). Exec. Sec., Ben H. Petty, Professor Highway Engineering, CE Bldg., Purdue University, Lafayette, Ind.

March 28-29—Chicago, Ill.
AMERICAN WATER WORKS ASSOCIATION—Illinois Section. Annual Meeting (LaSalle Hotel). Sec., J. L. Hart, U. S. Pipe & Foundry Co., 122 S. Michigan Ave., Chicago 3, Ill.

***March 29—Storrs, Conn.**
INSTITUTE OF PUBLIC SERVICE. Public Works Conference (University of Connecticut). Dir., Joseph M. Loughlin, University of Connecticut, Storrs, Conn.

March 30-April 1—Chicago, Ill.
AMERICAN INSTITUTE OF PLANNERS. Annual Meeting (Hotel Bismarck). Sec., Mrs. Ruth Bullerwell, Room 5-406A, 77 Massachusetts Ave., Cambridge 39, Mass.

April 4-6—Chicago, Ill.
MIDWEST POWER CONFERENCE. Annual Conference (Sherman Hotel). Sec., Edwin R. Whitehead, Illinois Institute of Technology, Chicago 16, Ill.

April 5-6—Albany, N. Y.
AMERICAN WATER WORKS ASSOCIATION—New York Section. Annual Meeting (Hotel Ten Eyck). Sec., R. K. Blanchard, Neptune Meter Co., 50 W. 50th St., New York 20, N. Y.

***April 9-10—Washington, D. C.**
NATIONAL HOUSING CONFERENCE, INC. Annual Meeting (Hotel Statler). Exec. Vice-Pres., Lee F. Johnson, 1025 Vermont Ave., NW., Washington 5, D. C.

***April 9-11—Hot Springs, Ark.**
ARKANSAS WATER AND SEWAGE CONFERENCE. Annual Convention (Hot Spring National Park). Sec., Harrison Hale, College of Engineering, 114 Chemistry Bldg., University of Arkansas, Fayetteville, Ark.

April 11-13—Hays, Kans.
AMERICAN WATER WORKS ASSOCIATION—Kansas Section. Annual Meeting (Hotel Lamer). Sec.-Treas., Harry W. Badley, 640 Highland, Salina, Kans.

April 11-13—Hays, Kans.
KANSAS SEWAGE WORKS ASSOCIATION. Annual Meeting (Hotel Lamer). Exec. Sec., Dwight Metzler, Kansas State Board of Health, Marvin Hall, University of Kansas, Lawrence, Kans.

***April 11-15—Miami, Fla.**
AMERICAN PLANNING AND CIVIC ASSOCIATION. Annual Convention (Hotel McAllister). Exec. Sec., Harlean James, 901 Union Trust Bldg., Washington 5, D. C.

April 15-18—Miami Beach, Fla.
ASSOCIATION OF STATE PLANNING AND DEVELOPMENT AGENCIES. Annual Meeting (Hotel Sherry-Frontenac). Exec. Dir., Walter H. Blucher, 1313 E. 60th St., Chicago 37, Ill.

April 19—Helena, Mont.
MONTANA SEWAGE WORKS ASSOCIATION. Annual Meeting (Placer Hotel). Sec., H. B. Foote, State Board of Health, Helena, Mont.

April 19-20—Lincoln, Nebr.
AMERICAN WATER WORKS ASSOCIATION—Nebraska Section. Annual Meeting (Cornhusker Hotel). Sec., E. Bruce Meier, 201 Mechanic Arts, University of Nebraska, Lincoln, Nebr.

April 20-21—Helena, Mont.
AMERICAN WATER WORKS ASSOCIATION—Montana Section. Annual Meeting (Hotel Placer). Exec. Sec., A. W. Clarkson, Montana State Board of Health, Helena, Mont.

April 23-28—Dallas, Texas
MUNICIPAL FINANCE OFFICERS ASSOCIATION OF THE UNITED STATES AND CANADA. Annual Meeting (Hotel Baker). Exec. Dir., Joseph F. Clark, 1313 E. 60th St., Chicago 37, Ill.

April 29-May 4—Miami, Fla.
AMERICAN WATER WORKS ASSOCIATION. Annual Convention (Dinner Key and Municipal Auditorium). Exec. Sec., Harry E. Jordan, 500 Fifth Ave., New York 18, N. Y.

***April 30-May 1—Shreveport, La.**
LOUISIANA MUNICIPAL ASSOCIATION. Annual Convention (Washington-Youree Hotel). Sec.-Treas., Mrs. Henry Jastremski, City Hall, Baton Rouge 1, La.

***April 30-May 2—Washington, D. C.**
CHAMBER OF COMMERCE OF THE UNITED STATES. Annual Meeting. Sec., Ralph Bradford, 1615 H St., NW., Washington, D. C.

May 7-9—Chattanooga, Tenn.
AMERICAN PUBLIC POWER ASSOCIATION. Annual Convention (Read House). Gen. Mgr., Carlton L. Nau, 1757 K St., NW., Washington, 6, D. C.

May 7-11—Detroit, Mich.
NATIONAL FIRE PROTECTION ASSOCIATION. Annual Convention (Hotel Statler). Gen. Mgr., Percy Bugbee, 60 Batterymarch St., Boston 10, Mass.

May 8-11—Chicago, Ill.
AMERICAN INSTITUTE OF ARCHITECTS. Annual Convention (Hotel Edgewater Beach). Exec. Dir., Edmund R. Purves, 1741 New York Ave., NW., Washington 6, D. C.

May 13-18—Atlantic City, N. J.
NATIONAL CONFERENCE OF SOCIAL WORK. Annual Meeting (Hotel Traymore). Exec. Sec., Joe R. Hoffer, 22 W. Gay St., Columbus 15, Ohio.

***May 16-20—Washington, D. C.**
NATIONAL CONFERENCE ON CITIZENSHIP. Annual Conference (Hotel Statler). Dir., Carl B. Hyatt, Dept. of Justice, Washington, D. C.

May 17-19—Vancouver, B. C.
AMERICAN WATER WORKS ASSOCIATION—Pacific Northwest Section. Annual Meeting. Sec., O. P. Newman, Boise Water Corp., Boise, Idaho.

***May 21-23—St. Louis, Mo.**
MISSOURI ASSOCIATION OF PUBLIC UTILITIES. Annual Convention (Jefferson Hotel). Sec., Hinkle Statler, Merchants Bank Bldg., 101 W. High St., Jefferson City, Mo.

May 21-23—Winnipeg, Man.
AMERICAN WATER WORKS ASSOCIATION—Canadian Section. Annual Meeting (Royal Alexandra Hotel). Sec., A. E. Berry, Ontario Dept. of Health, Parliament Bldgs., Toronto 2, Ont.

June 7-8—Springfield, Mass.
NEW ENGLAND SEWAGE WORKS ASSOCIATION and NEW YORK SEWAGE AND INDUSTRIAL WASTES ASSOCIATION. Fourth Joint Meeting (Hotel Kimball). Secs. (New England), Walter E. Merrill, 511A, State House, Boston 33, Mass.; (New York), Ralph E. Sweeney, 21 N. Broadway, White Plains, N. Y.

***June 8-9—Seattle, Wash.**
ASSOCIATION OF WASHINGTON CITIES. Annual Convention (Olympic Hotel). Exec. Sec., Chester Biesen, 250 Smith Hall, University of Washington, Seattle 5, Wash.

***June 13-17—Mackinac Island, Mich.**
NATIONAL ASSOCIATION OF TAX ADMINISTRATORS. Annual Convention (Grand Hotel). Exec. Sec., Charles F. Conlon, 1313 E. 60th St., Chicago 37, Ill.

June 27 or 29—Trenton, N. J.
AMERICAN WATER WORKS ASSOCIATION. New Jersey Section. Summer Meeting (Inspection of De Laval Steam Turbine Company Plant, and Luncheon). Sec., C. B. Tygert, Box 178, Newark 1, N. J.

***June 24-26—Philadelphia, Pa.**
PENNSYLVANIA ASSOCIATION OF TOWNSHIP COMMISSIONERS. Annual Meeting (Bellevue-Stratford Hotel). Sec.-Treas., H. A. Fritschman, 2325 Darby Rd., Havertown, Pa.

***June 28-30—Biloxi, Miss.**
MISSISSIPPI MUNICIPAL ASSOCIATION. Annual Convention (Buena Vista Hotel). Mgr., George L. Sugg, Lampton Building Annex, P. O. Box 531, Jackson, Miss.

***July 5-7—Milwaukee, Wis.**
NATIONAL ASSOCIATION OF COUNTY OFFICIALS. Annual Convention (Hotel Schroeder). Sec.-Treas., Keith L. Seegmiller, 1616 Eye St., NW., Washington 6, D. C.

***August 22-24—State College, Pa.**
PENNSYLVANIA SEWAGE AND INDUSTRIAL WASTES ASSOCIATION. Annual Conference (Pennsylvania State College). Sec.-Treas., Bernard S. Bush, Kirby Health Center, Wilkes-Barre, Pa.

Old-Style Voting Too Slow for Phoenix

THE slowness in reporting results of the November 7, 1950, elections in Phoenix, Ariz., centered attention on the need for mechanical devices. At the request of the City Council, a study is being made to determine whether an agreement can be reached with the County Board of Supervisors which will help to bring voting machines to all heavy voting precincts in the city. There is a possibility that the city might pay rental, or else share the cost with the county to encourage the county's extending the use of the machines.

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Municipal and Civic Publications

Municipal Fire Administration Text

MUNICIPAL FIRE ADMINISTRATION—*Published for the Institute for Training in Municipal Administration, by the International City Managers' Association,* 1313 *E. 60th St., Chicago* 37, *Ill. Fifth Edition,* 1950. 498 *pp.* $7.50.

The chapters on organization, personnel management, department buildings and equipment, distribution of equipment and personnel, and fire-alarm signaling systems have been almost entirely rewritten in this fifth edition of a popular textbook on fire-fighting administration and organization. All other chapters have been extensively revised to incorporate new developments since 1946, the date of the previous edition. Editors of the volume are Horatio Bond, Chief Engineer of the National Fire Protection Association, and Orin F. Nolting, Assistant Director, International City Managers Association.

The purpose of the book is to provide the fire chief and other commanding officers of the fire department with an appreciation of important fire-safety problems and to set forth accepted administrative methods of getting work done. Technical material dealing with such matters as the chemistry of fire, hydraulics, drills, and evolutions is omitted because there is already much literature in the field of fire-protection engineering.

Planning of the St. Louis Region

DEVELOPMENT OF THE MISSOURI-ILLINOIS METROPOLITAN DISTRICT—*By Harland Bartholomew and Associates for the Bi-State Development Agency,* 915 *Olive St., St. Louis, Mo. Dec.* 1950. 75 *pp.*

This is a detailed study of the St. Louis metropolitan region which presents existing conditions, problems, and recommendations or conclusions on such topics as population, land use, highways and bridges, transportation, recreation, schools, flood control, and public utilities. There are 23 maps or diagrams and 17 tables to illustrate the text.

New York City's Recruiting Pamphlet

NEW YORK CITY'S CIVIL DEFENSE NEEDS YOU—*Prepared by Office of Civil Defense, City of New York.* 1951. *Illus.* 32 *pp.*

New York City has just released a recruiting pamphlet that really does the job of selling civil defense. For the man or woman who is even remotely interested in serving, the closing plug for each chapter—"enlist today for 'Operation Neighbor'"—should materially help to arouse an active impulse to do something.

The cover is attractively designed, with a "blackout" silhouette of midtown Manhattan as the background; the title *New York City's Civil Defense Needs You;* the familiar CD triangle, and the words "Volunteer Today!" A short, to-the-point message from Mayor Impellitteri is followed by an outline by Civil Defense Director Arthur W. Wallander.

There are seven chapters, describing the several civil-defense divisions and outlining qualifications, training, etc., of volunteers. Chapter headings are cleverly handled with cuts illustrating the principal function of each division and indicating the number of volunteers "wanted."

Two indexes—a detailed one near the back of the pamphlet and a divisional one on the back cover—add greatly to the effectiveness of the booklet. Maps of the five boroughs are included with recuiting or enrollment locations spotted. There is also a list of exact locations of enrollment centers of all the various services.

The inside back cover reproduces an enrollment form, so that interested persons can have all their data assembled when they go to sign up.

All in all, this is a really fine job. Five hundred thousand have been printed, and there should be more.

S. A. ANTHONY, JR.

Municipal Purchasing

PURCHASING FOR SMALL CITIES—*By Russell Forbes. Publication No.* 104 *of the Public Administration Service,* 1313 *East 60th St., Chicago* 37, *Ill.* 1951. 23 *pp.* $1.

Centralization of purchases can make impressive reductions in expenditures for municipal commodities. Small cities which are unwilling or unable to adopt complete centralization can at least use some of the techniques of centralized purchasing to effect savings. This manual should be useful in any case, for it discusses how to establish a purchasing system and how to operate the purchasing department once it is established. The necessary forms and procedures are explained and illustrated.

A Guide for City Councilmen

ON THE CITY COUNCIL—*By Arthur W. Bromage. Published by the George Wahr Publishing Co.,* 105 *No. Main St., Ann Arbor, Mich.* 1950. 80 *pp.* $1.

The author of his highly absorbing booklet is Professor of Political Science at the University of Michigan. In this capacity, he has long contributed to progressive reform activities in the local government field.

The present booklet has grown out of Professor Bromage's experiences as a city councilman in Ann Arbor during 1949-1950. It is a collection of essays which center around the problems of a freshman councilman, and is, therefore, in particularly close touch with political realities.

New councilmen anywhere will welcome the distilled experience and advice contained in the publication. And, as the author states in his preface, "Oldtimers can compare notes and indulge, perhaps, in an occasional chuckle over the struggles of a freshman on the city council."

Seaplane Facilities

SEAPLANE FACILITIES—*Civil Aeronautics Administration, U. S. Department of Commerce. For sale by the Superintendent of Documents, Washington* 25, *D. C. May* 1950. 54 *pp.* 25 *cents.*

This booklet answers such questions as: Does your community need a seaplane base? If so, where should it be located? What on-shore or off-shore improvements should be provided for now and in the future?

It goes on to explain that seaplane facilities may range in development from a simple mooring-buoy and boat, small beaching-ramp, pier, or floating dock to the more highly developed bases consisting of on-shore buildings for offices, hangars, recreation, repair shops and shoreline docks and ramps. The publication should assist local communities interested in solving aviation problems concerning seaplane facilities.

Tax Rates of Cities

TAX RATES OF AMERICAN CITIES—*Bureau of Governmental Research, Detroit, Mich. January* 1951 *issue of* National Municipal Review *published by the National Municipal League,* 299 *Broadway, New York* 7, *N. Y.* 22 *pp.*

This is the 29th annual tabulation of tax rates of cities of over 30,000 population. The report shows that the year 1950 produced a leveling off of the upward trend in property-tax rates and assessed valuations which has characterized the post-war years.

County Manager Plan

THE COUNTY MANAGER PLAN—*National Municipal League,* 299 *Broadway, New York* 7, *N. Y.* 1950, *revised edition.* 30 *pp.* 20 *cents.*

This easy-to-read pamphlet reviews the status of county government in the United States, and describes the surprising progress which has been made in the 14 counties which now operate under a manager form of government. Appendix II in the pamphlet lists state-by-state progress in county structural reorganization.

Building Inspection Handbook

MODERN BUILDING INSPECTION—*R. C. Colling, Hal Colling, Rolland P. Cravens, and Robert P. Fox, editors. Building Standards Monthly Publishing Company,* 124 *West Fourth St., Los Angeles* 13, *Calif. Second Edition,* 1951. 646 *pp.* $10.

The new edition of this volume is an extremely complete and authoritative work. The book is designed for use as a "bible" by municipal, state, and county building officials, and also as a textbook for architectural and engineering courses in colleges, universities, and trade schools.

Each chapter is written by an authority on the subject covered. Most of the authors are operating municipal officials and, therefore, have been able to bring a wealth of practical experience before the reader and user of the book.

A noteworthy improvement in the second edition over the first edition is the inclusion of a lengthy, but readable history of building codes for 5,000 years. Detailed information is also given on the legal responsibility of the building official and the prosecuting of building code violations. The book also includes a comprehensive chapter on public relations and a greatly enlarged chapter on field inspection.

Dispersal Program for National Defense

HOW CAN WE DISPERSE OUR LARGE CITIES?—*By Donald and Astrid Monson. Reprinted from Dec.* 1950 *and Jan.* 1951 *issues of* THE AMERICAN CITY, 470 *Fourth Ave., New York* 16, *N. Y. Illus.* 8 *pp. Available from Editorial Department.* 10 *cents per single copy.*

An incisive, but comprehensive discussion of the dispersal problem which presents a well-thought-out program designed to be within the means of the national economy. Illustrations include a diagrammatic study of possible development in the Detroit metropolitan area, a map showing the pattern of decentralized government employment centers proposed in the Washington, D. C., region, and a sketch showing how expressway planning in cities can become an integral part of preparation against atomic attack.

Community Health Service

WHERE DO WE STAND ON LOCAL HEALTH UNITS?—*Published by the National Advisory Committee on Local Health Units, National Health Council,* 1790 *Broadway, New York, N. Y.* 1951. 18 *pp.*

According to this five-year report of progress in developing local responsibility for community health services, the percentage of the nation's population served by full-time local health units has risen from 62 to 71. Progressive steps—regional conferences, health councils, helpful legislation—are described, and increased effort is urged in view of the need to keep our citizens in top condition during the period of emergency.

Ready Reference on Parliamentary Law

HANDBOOK ON PARLIAMENTARY LAW—*By Joseph T. Karcher. New Jersey Academy Press, P. O. Box* 723, *New Brunswick, N. J.* 1950. 96 *pp.* $3 *cloth covers.* $1.50 *paper covers.*

The basic rules of parliamentary law are simply stated in this handbook, which covers such subjects as the conduct of meetings, officers and their duties, and classes of motions. The author has had wide experience in municipal and civic affairs. The chart showing synopsis of rules and order of precedence, at the rear of the book, should be especially useful to any chairman who is not sure which motions are privileged, which incidental, and which subsidiary, and how each one must be handled.

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Comprehensive Study of County Government

COUNTY GOVERNMENT ACROSS THE NATION—*Edited by Paul W. Wager. The University of North Carolina Press, Chapel Hill, N. C.* 1950. 817 *pp.* $7.50.

This is, without doubt, the most complete and informative volume on town and county government that has yet been published, and, as such, it deserves a key spot in every library devoted to public administration and community affairs.

The book is a comparative study of county government in the United States. A representative county in each state has been selected for concentrated study, and a comprehensive picture of its functionings is given. Dr. Wager, editor of the volume, is also author of fifteen of the chapters. The remaining portions of the book were written by professors of political science and government officials, many of them former students of Dr. Wager and all well acquainted with the county in question.

The book does not stop with generalizations but shows how the county, that vital governmental unit, differs from state to state, how it is similar, and how it varies in power, functions, and processes. The book also gives information on school districts and town or township government.

The author makes clear his belief in the importance of reform in county administration, and urges particularly that county executives or chief administrators be provided to secure integration in the management of county affairs.

Fire Inspection Manual

THE N.F.P.A. INSPECTION MANUAL—*National Fire Protection Association, 60 Batterymarch St., Boston 10, Mass.* 1950. 336 *pp.* $3.

This handy pocket-size manual, edited by Horatio Bond, N.F.P.A. chief engineer, has been issued for use in inspection work done for fire prevention and fire protection by property owners, fire departments, and insurance men. The text recognizes the increasing amount of inspection work being done by property owners themselves, including that done by the central managements of large industries, which have many plants under one management's direction. It is also applicable to the government agencies which, like large central managements, have a great variety of posts, depots, warehouses, and other projects which require attention to prevent fire destruction and loss of life.

There are many new features in this volume, which replaces the book *Field Practice*—out of print for some time. Both new and experienced inspectors will find the book's organization useful.

There is extensive cross-reference to the accepted standards of the National Fire Protection Association and other national standards used in building and fire-prevention codes and by insurance boards and bureaus.

Bridge Competition

WELDED DECK HIGHWAY BRIDGES—*The James F. Lincoln Arc Welding Foundation, P. O. Box 5728, Cleveland 1, Ohio.* 247 *pp.* $2.00.

Contains details of the designs submitted in the 1949 *Welded Bridges of the Future*. The competition covered a 120-foot deck highway bridge. Prof. J. G. Clark, of the University of Illinois, editor of the book, divided it into chapters as follows: Structural Types; Floor Systems; New Sections; Special Connections and Details, and Quantities and Costs. The book has over 100 drawings.

Pension and Disability Plans—Virginia Municipalities

PENSION AND DISABILITY PLANS IN VIRGINIA CITIES AND TOWNS—*League of Virginia Municipalities, 902 Travelers Bldg., Richmond 19, Va. Report No. 330. December* 1950. 20 *pp.* $1.

This report contains brief summaries of various local pension plans in Virginia, stressing the more significant information. The report is designed to be of value to those interested in comparing various local plans with an eye to their improvement in terms of actuarial soundness.

Report-Writing Guide Highly Practical

REPORT WRITING—*By Carl Gaum, Harold Graves, and Lyne Hoffman. Third Edition. Prentice-Hall, Inc., Publishers, 70 Fifth Ave., New York* 11, *N. Y.* 1950. 384 *pp.* $4.

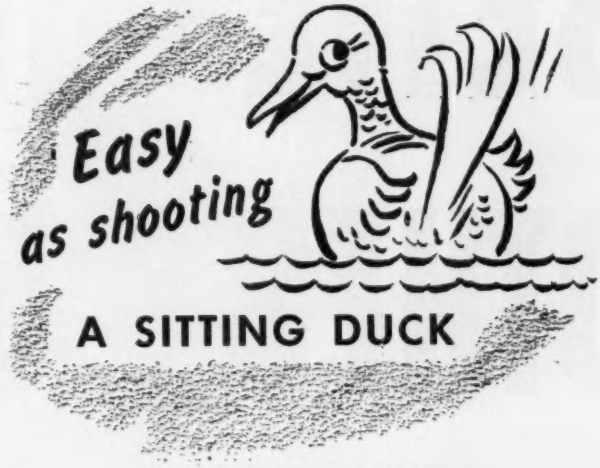
A highly practical book, written by an engineer and two professors of English composition, which takes the reader step by step through the report-writing process. It should be explained that, as used in this volume, the phrase "report writing" is more concerned with making technical reports useful and understandable for within-industry or governmental use, than with giving advice on how reports designed for the general public can be popularized and streamlined.

However, the book's contents should prove valuable to municipal administrators, department heads, and other officials who want to simplify and make more clear the many reports with which they are regularly concerned.

Delaware Basin Project Description

THE DELAWARE RIVER BASIN WATER PROJECT—*Interstate Commission on the Delaware River Basin, Broad Street Station Bldg., Philadelphia 3, Pa.* 1950. 20 *pp.*

A brief description of the pioneering Incodel project for the utilization of the waters of the Delaware River Basin. The Interstate Commission is composed of four states—Pennsylvania, New York, New Jersey, and Delaware. The report, primarily directed to legislators of these states, urges that they approve and adopt the proposed project and create a Commission with power to finance, construct, and operate it. The report explains in layman's language the comprehensive document prepared by Malcolm Pirnie Engineers, and by Albright and Friel, Inc., for Incodel, which gives complete information on every aspect of the proposed river-basin project.



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Public Health Law Compilation

PUBLIC HEALTH LAWS OF THE CITY OF PITTSBURGH—*School of Law, University of Pittsburgh, Pittsburgh, Pa.* 1950. 1,038 *pp.* $5.

This comprehensive volume is an annotated compilation of the laws, regulations, and ordinances of the State of Pennsylvania and the City of Pittsburgh, governing the administration of public health in Pittsburgh. The book represents the closest kind of collaboration among legal, administrative, and scientific personnel. Ample editorial comments incorporate judicial decisions, administrative practices, and legislative history.

As the first book of its kind to be published anywhere in the country, its usefulness will be apparent to officials in other cities. Students of public health and of local government; lawyers and businessmen whose activities are affected by the functions of health authorities; members of the medical and related professions, and laymen generally interested in municipal affairs will find in this compilation materials not otherwise available in published form.

Urban Mapping Book

URBAN MAPPING, STANDARD SYMBOLS AND METHODS OF REPRESENTATION — *Central Mortgage and Housing Corporation, Ottawa, Canada.* 1950. 15 *maps.*

This book contains a series of maps of a small city in Canada which is called "Sampletown." The maps are offered as a guide to other Canadian cities and towns in the methods of preparing their own maps. The book shows the kinds of information which can be given on maps, and also describes the method of presenting this information through the use of standard symbols and colors. The 15 maps shown deal with uses of land, location of municipal facilities, population distribution, and other basic factors in urban development.

New York City Redevelopment Reports

REDEVELOPMENT REPORTS — *Committee on Slum Clearance Plans, City of New York, Randall's Island, New York 35, N. Y. Robert Moses, Chairman. Jan.* 1951. *Seven comprehensive reports, averaging 60 pp. Illus.*

This is probably the most ambitious and most specific series of redevelopment prospectuses to be issued by any city for slum clearance under Title I of the Housing Act of 1949. The reports cover seven specific areas in New York City designated for redevelopment: Corlears Hook, 12 acres; Washington Square South, 40 acres; South Village, 14½ acres; Delancey Street, 11 acres; Harlem Area, 12 acres; North Harlem, 12 acres, and Williamsburg Section, 45 acres.

Each booklet describes in more or less detail a specific project for each area, outlining the kind of conditions which will be imposed to invite definite offers by responsible private groups. The Committee on Slum Clearance makes it clear that it has conferred with such groups and in several instances they have agreed to bid on the site selected.

Parks and Playgrounds for the Nation's Capital

OPEN SPACES AND COMMUNITY SERVICES—*Published by the National Capital Park and Planning Commission, Washington, D. C. Monograph No. 4,* 1950. 58 *pp.*

Although numbered 4, this monograph is the third in order of publication in the series on the comprehensive plan for Washington and its environs. It sets forth park, parkway, and playground systems. The part relating to supervised recreation in the district is explained by an inventory which lists each existing playground and proposals for its ultimate development. The second part presents a physical planning program for the school system of the district. The third part relates to the district plan for public libraries. The fourth explains public water supplies and sewage-disposal systems in Washington, as well as other public services, such as health centers, fire and police protection, etc.

Slum Clearance and Low-Rent Public Housing

THE RELATIONSHIP BETWEEN SLUM CLEARANCE AND URBAN REDEVELOPMENT AND LOW-RENT PUBLIC HOUSING — *Division of Slum Clearance and Urban Redevelopment, Housing and Home Finance Agency, Washington, D. C.* 1950. 15 *pp.*

This pamphlet analyzes the methods by which the Housing Act of 1949 attacks the problems of slums and bad housing through two separate but related programs, Title I and Title III. It describes the results achieved under the first U. S. Housing Act, that of 1947, and shows how the need for a broader attack upon the slums resulted in passage of the Housing Act of 1949, which set up the slum clearance and urban redevelopment program and the low-rent public housing program as separate but related operations.

The Public Library's Contribution to Society

A FORUM ON THE PUBLIC LIBRARY INQUIRY—*Edited by Lester Asheim. Columbia University Press, 2960 Broadway, New York 27, N. Y.* 1950. 282 *pp.* $3.75.

These individual critical reports delivered at the Conference at the University of Chicago Graduate Library School (Aug. 8-13, 1949) are supplemental to the Public Library Inquiry Reports released by the Social Science Research Council, and assume a knowledge of the Inquiry reports. Some of the subjects under discussion are "The Public Library in the Political Process," "The Library's Public," "Work Measurement in Public Libraries," "The Public Libraries: a Study of Professional Personnel in the American Public Library," "The Book Industry," "Government Publications for the Citizen," and "The Information Film."

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Planning and Housing Reports Received

ATLANTA, GA.—Directory of Local Officials, Metropolitan Planning District, 1950. Metropolitan Planning Commission, 502 Title Bldg., Atlanta 3. 30 pp.

CALDWELL, N. J.—A Comprehensive Plan for the Most Desirable and Economical Development of Caldwell Township. Planning Board, Caldwell. Nov. 1950. Mimeo. Maps. 35 pp. Available from Scott Bagby and Weaver Pangburn, 14 Mountainside Park Terrace, Upper Montclair, N. J. $3.

DETROIT, MICH.—Population Projections by Development Areas, Detroit Region, 1960 and 1970. Detroit Metropolitan Area Regional Planning Commission, 1002 Cadillac Square Bldg., Detroit 26. Dec. 1950. Mimeo. Maps. Tables. 24 pp.

MANHATTAN BEACH, N. Y.—Manhattan Beach Waterfront Park. Dept. of Parks, City of New York. Feb. 1951. Illus. 6 pp.

MARYLAND—Development Plan for Patapsco River Valley Park. Maryland State Planning Commission, 100 Equitable Bldg., Baltimore 2. Oct. 1950. Maps. 51 pp. 50 cents.

MEMPHIS, TENN.—1949-50 Annual Report of the Memphis Housing Authority, 264 N. Lauderdale, Memphis. Illus. 32 pp.

NEW YORK, N. Y.—21st Annual Report of the Regional Plan Assn., Inc., 205 East 42nd St., New York 17. Mimeo. 15 pp.

——Report on Site Clearance and Relocation. New York City Housing Authority. Mimeo. 24 pp.

——The Slums New York Forgot. A Report by the Committee on Housing. Community Service Society of New York. 105 E. 22nd St., New York 10. 1950-51. Illus. Tables. Maps. 20 pp.

——Wollman Memorial Playground and Skating Rink. Dept. of Parks, City of New York. Dec. 21, 1950. Illus. 4 pp.

NEW YORK—Annual Report of the Commissioner of Housing to the Governor and the Legislature for the Year Ending March 31, 1950. Tables. Illus. 123 pp.

PROVIDENCE, R. I.—Parking in Downtown Providence—A Report on the General Plan for Automobile Parking Facilities in the Providence Central Business District. Prepared by the City Plan Commission in collaboration with the Providence Redevelopment Agency and the Traffic Engineer. Sept. 1950. Illus. 16 pp.

SACRAMENTO, CALIF.—Parking Report. Sacramento City Planning Commission, City Hall, Sacramento. June 1950. Maps. Charts. 60 pp. $1.

TULSA, OKLA.—*Planning Bulletin* No. 3. Tulsa County Planning Commission, 1212 S. Frisco, Tulsa. Jan. 1951. Mimeo. 10 pp.

UNITED STATES—A Report of Progress. Institute for Urban Land Use and Housing Studies, Columbia University, New York 27, N. Y. Graphs. 25 pp.

——Public Aid to Housing and Land Redevelopment. By Stefan A. Riesenfeld and Warren Eastlund. Reprinted from *Minnesota Law Review*, University of Minnesota. June 1950. issue. 42 pp.

Other Reports Received

ARKANSAS—The Arkansas Tourist Industry. By Ernest C. Harvey. Institute of Science and Technology, University of Arkansas, Fayetteville. Mimeo. Tables. 31 pp.

CALIFORNIA—California State Government: A Guide to its Organization and Functions. Prepared by State Dept. of Finance. Available from Printing Division, Documents Section, 11th and O Sts., Sacramento 14. 1951. Charts. 111 pp. 50 cents.

——Organization Charts, California State Government. Dept. of Finance, Management Analysis Section. Charts. 31 pp.

CHICAGO, ILL.—1951 Annual Appropriation Ordinance. Municipal Reference Library, 1005 City Hall, Chicago 2. 187 pp. 12 cents.

——1950 Annual Message of W. N. Erickson, President, Board of Cook County Commissioners. Municipal Reference Library, 1005 City Hall, Chicago 2. 388 pp. 12 cents.

——1951 Election Calendar for Chicago and Surrounding Towns. Issued by Board of Election Commissioner of Chicago. Municipal Reference Library, 1005 City Hall, Chicago 2. 32 pp. 3 cents.

——Traffic Regulations—Revised Traffic Code, passed by City Council on Dec. 22, 1950. Municipal Reference Library, 1005 City Hall, Chicago 2. 104 pp. 3 cents.

CLAWSON, CALIF.—Open Letter to City Taxpayers. Dec. 1950. Mimeo. Charts. 4 pp.

CONNECTICUT—Public School Expenses and State Aid in Connecticut's 169 Towns. Conn. Public Expenditure Council, 21 Lewis St., Hartford 3. Jan. 1951. Tables. 33 pp.

DALLAS, TEXAS—Annual Financial Statement. Mimeo. 65 pp.

DETROIT, MICH.—1950 Annual Report. Detroit Metropolitan Area Regional Planning Commission, 1002 Cadillac Square Bldg., Detroit 26. Maps. 24 pp.

ILLINOIS—Condensed Summary of 1950 Illinois Sanitary Water Board Activities. Mimeo. Tables. 5 pp.

IRVINGTON, N. J.—A Municipal Service for Both Normal and Emergency Periods. 1950 Report of the Department of Public Recreation. Mimeo. Unpaged.

JACKSON, MICH.—Jackson's City Government: A Supplementary Booklet for Use in Jackson's Public Schools. By Eugene G. Moody, Administrative Assistant to the City Manager. 1950. Mimeo. 81 pp.

KANSAS—First Annual City Clerks Training

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School. A Report prepared by the Bureau of Government Research, University of Kansas, Lawrence. Jan. 1, 1951. Mimeo. 38 pp.

——Kansas Tax Rate Book, 1950. Pre-printed from *Kansas Government Journal*, Jan. 1951 issue. The League of Kansas Municipalities, 512 Capitol Federal Bldg., Topeka. Tables. 56 pp. $5.

KENTUCKY — Taxation of Public Utility Gross Receipts in Kentucky. Prepared by the Bureau of Business Research, University of Kentucky, for the Committee on Functions and Resources of State Government. Published by The Legislative Research Commission, Frankford. Jan. 1951. Mimeo. Tables. 18 pp.

LOS ANGELES, CALIF.—Technical and Administrative Report on Air Pollution Control in Los Angeles County. Air Pollution Control District, County of Los Angeles. Tables. 48 pp.

LOUISVILLE, TENN.—Payroll Tax: The Louisville Experience. By James W. Martin. Municipal Technical Advisory Service, Extension Division, University of Tennessee, Knoxville. Dec. 1950. 3-fold.

MILWAUKEE, WIS.—Milwaukee Is Yours. Municipal Reference Library, City Hall. Unpaged.

MINNEAPOLIS, MINN.—Final Budget Estimate for 1951. Issued by The Board of Estimate and Taxation. 62 pp.

NEW YORK, N. Y.—Report of the Superintendent of Schools, Part I, Adult Education, 1948-50. Illus. 26 pp.

NOTRON, VA.—Statistical Report for the Period July 1, 1950, to Dec. 31, 1950. Prepared by the Office of the Town Manager. Mimeo. Tables. Unpaged.

OREGON — 1949-50 Annual Report of the Tax Supervising and Conservation Commission of Multnomah County. Tables. 88 pp.

PATERSON, N. J.—1950 Annual Report. Tables. 82 pp.

PORTLAND, ORE.—1950 Annual Report. Jan. 5, 1951. Mimeo. 11 pp.

POUGHKEEPSIE, N. Y.—Finance Survey Report, Part Two: Revenue and Assessments. Poughkeepsie Area Development Assn., 52 Market St., Poughkeepsie. Mimeo. Tables. 29 pp.

ROCKVILLE, MD. — The Government of Rockville. By Christian L. Larsen and Richard D. Andrews. Bureau of Public Administration, University of Maryland, College Park. 1950. Tables. 76 pp.

SAGINAW, MICH.—Annual Report. July 1949 to June 1950. 32 pp.

SAYREVILLE, N. J.—Second Annual Message of Mayor Anthony J. Popowski to the Borough Council and People of Sayreville. Jan. 1951. 14 pp.

SHOREWOOD, WIS.—What's Your Share in Local Taxes? Office of the Village Manager. Leaflet.

TENNESSEE—Your Money and Mine: State Finances, 1949-50. Tennessee State Planning Commission, 417 Seventh Ave. N., Nashville 3. Mimeo. Tables. Charts. 56 pp.

TRENTON, N. J.—Annual Comptroller's Report for the Year Ending Dec. 31, 1949. Tables. 108 pp.

TOKYO, JAPAN—A Concise Handbook of Tokyo. Compiled by the Archives and Documents Section, General Affairs Bureau, Tokyo. Illus. 65 pp.

UNITED STATES—Air-Raid Precautions for Personnel, Plans and Buildings. A Report Prepared for Metropolitan Group Policyholders. Policyholders Service Bureau, Metropolitan Life Insurance Co., 1 Madison Ave., New York 10, N. Y. Tables. 27 pp.

——The Architects' Participation in Civilian Defense. National Defense Committee Bulletin No. 1. The American Institute of Architects, 1741 New York Ave., N.W., Washington 6, D. C. Dec. 15, 1950. 18 pp.

——Contract forms for Construction of Municipal Public Works. Technical Bulletin No. 3. Municipal Technical Advisory Service, Extension Division, University of Tennessee, Knoxville. Jan. 1951. 48 pp.

——5th Annual Report of the Operations under the Federal Airport Act. U. S. Dept. of Commerce, Civil Aeronautics Administration, Washington, D. C. 1950. Tables. 69 pp.

——Fire Safety for Junior High Schools. National Commission on Safety Education, 1201 Sixteenth St., NW., Washington 6, D. C. 1951. 32 pp. 50 cents.

——Large-City Finances in 1949. Report of U. S. Census Bureau. Washington, D. C. Sept. 1950. 56 pp.

——Proceedings of 56th Annual Public Works Congress, New York City, Oct. 1950. American Public Works Assn., Chicago 37, Ill. Illus. 164 pp. $5.

——Proceedings of 21st Annual Meeting, Institute of Traffic Engineers, held in New York City, Sept. 24-27, 1950. Institute of Traffic Engineers, Strathcona Hall, New Haven 11, Conn. Tables. Maps. 95 pp.

——1950 Report, Interstate Sanitation Commission (New York, New Jersey, and Connecticut), 110 William St., New York 7, N. Y. Mimeo. Tables. 54 pp.

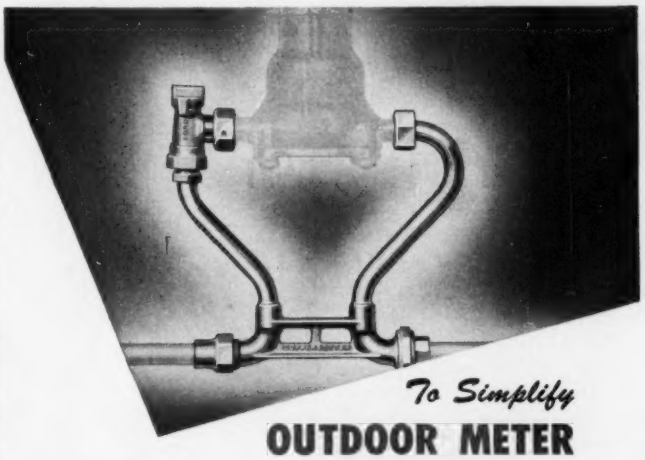
——Final Act and Related Documents of United Nations Conference on Road and Motor Transport, held at Geneva, Switzerland, Aug. 23 to Sept. 19, 1949. Columbia University Press, 2960 Broadway, New York 27, N. Y. 1950. 114 pp. $1.50.

——What Price Water? American Water Works Assn., 500 Fifth Ave., New York 18, N. Y. Dec. 1950. Unpaged.

VIRGINIA—Bonded Debt of Virginia Cities as of Dec. 31, 1950. League of Virginia Municipalities, 905 Travelers Bldg., Richmond 19. Report No. 331. Jan. 1951. Mimeo. Tables. 8 pp. 75 cents.

——Bonded Debt of Virginia Towns as of Dec. 31, 1950. League of Virginia Municipalities, 905 Travelers Bldg., Richmond 19. Report No. 332. Jan. 1951. Mimeo. Tables. 16 pp. 75 cents.

——Shall a Town Become a City of the Second Class? League of Virginia Municipalities, 902 Travelers Bldg., Richmond 19. Report No. 171 (Revised). Mimeo. 9 pp. 75 cents.



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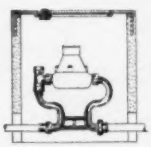

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Dyersburg Public Relations

(*Continued from page* 115)

for the immediate undertaking of this deferred work. Funds for the projects are available from the receipts of a street bond issue and from special assessments against abutting property owners.

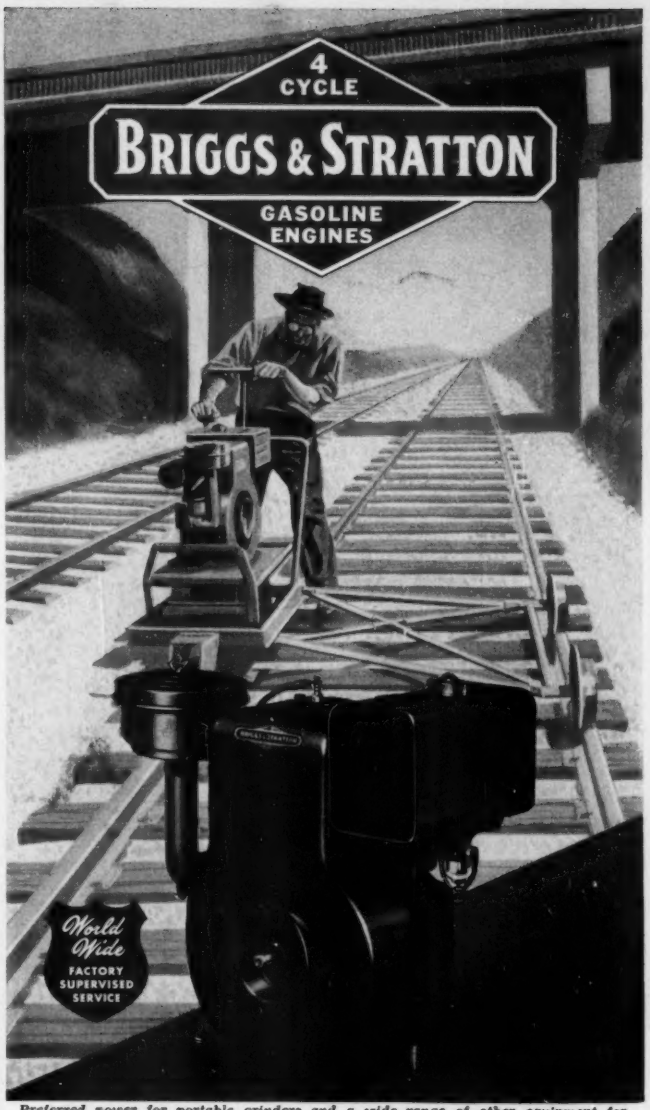
Swimming Pool.—Major emphasis in the field of municipal recreation during 1950 was placed on the swimming pool. The bath house was enlarged and redecorated and other minor improvements made. The 1951 capital budget allots only a small sum for continued improvements of physical facilities, but the Planning Commission went on record as approving the initiation of a city recreation program with a paid staff in order that best use might be made of the present recreation facilities.

Water Rates Boosted.—The new municipal water rate, adopted in May 1950, increased revenues of the water department by more than $15,000. This increase will be exceedingly important during 1951, since major improvements to the municipal water system, not foreseen a year ago, are now a necessity. One of the municipal wells failed at the close of the past year, and a new well, originally scheduled for 1953, is now being completed. Additional demand on the water system indicates the imperative need of an over-all water survey similar to that prepared for the sewer system. The 1951 budget, therefore, calls for this expenditure.

School Construction.—The original 1950 capital budget called for large-scale expenditures to improve the municipal school system. A good share of this work was completed during the past year, but further major construction, particularly at the local Negro high school, is slated in the 1951 capital budget.

Cemetery Problems.—While a good deal of discussion was given the proposal to inaugurate a perpetual-care plan for the local cemeteries, the Board of Mayor and Aldermen made no move toward setting up this program during 1950, despite the fact that all agreed the cemeteries represented a financial liability to the city. Some increases in the price of grave spaces were adopted, but this did little or nothing toward solving the financial problem. As a matter of fact, the yearly receipts from sale of plots dropped sizably after the adoption of the new charges, while the cost of maintenance increased by several thousand dollars. Information on the experience of the past year was recently prepared and

(*Continued on page* 161)



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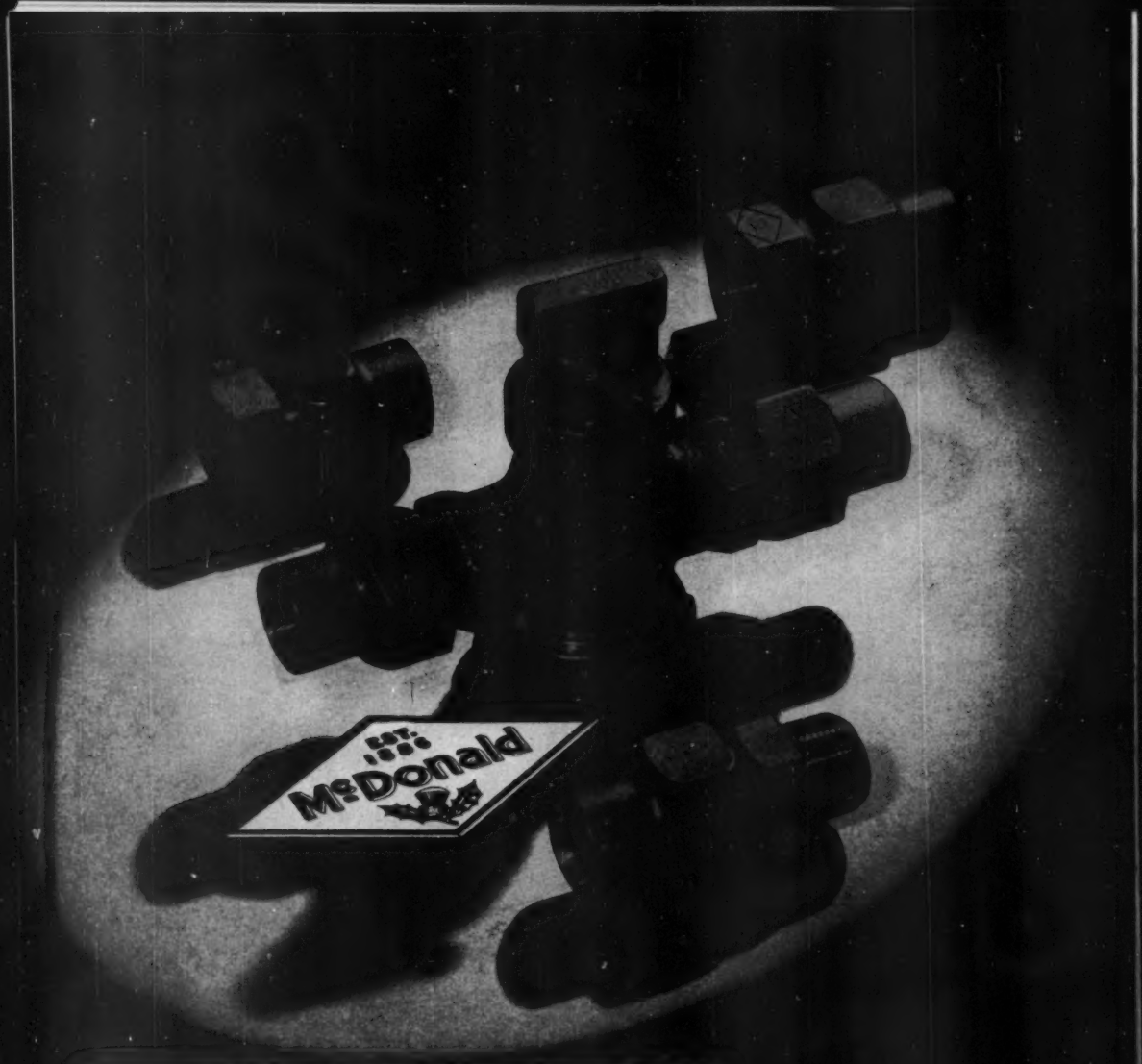

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(*Continued from page* 159)

forwarded to the Board of Mayor and Aldermen, together with a Planning Commission recommendation to the effect that the institution of a perpetual-care plan be delayed no longer.

Solid Local Backing

While the review of the first year of the Dyersburg capital budget indicates that definite progress has been made, it also points out a condition not unusual with municipalities at this time—a number of the improvements had to be postponed owing to materials and labor shortages and to other local problems. The 1951 capital budget, which proposes to carry on with the planned improvements for this fiscal year, plus a number of those delayed from 1950, will probably also face problems for the self-same reason. However, there is no discouragement evident in Dyersburg. The capital-budget program has solid local support. Whether particular projects can be built in 1951 or have to be further delayed, at least everyone is aware of what is to be done and how it is to be accomplished. In the words of one local citizen, "now that we're on the right track, watch our smoke!"

To Spur Youth Participation in Community Affairs

NATIONAL and state prizes totaling $25,000 are to be awarded in a "Building Freedom with Youth" contest, announced on January 16 by the General Federation of Women's Clubs and the Kroger Company, a food chain with headquarters in Cincinnati, Ohio.

The program is designed to develop in young people deeper devotion to America and greater understanding of the democratic way of life by encouraging their participation in community affairs.

A pamphlet giving full details of the contest is available on application to the General Federation of Women's Clubs, 1784 N Street, NW., Washington, D. C.

City Manager Vacancy in Kalamazoo

THE City Manager position in Kalamazoo, Mich., is open, reports Elton W. Ham, personnel officer, and the City Commission is interviewing applicants for a permanent appointment. Earl Fraser, planning director, was appointed acting manager with the resignation of B. LeRoy Gilbert, former city manager.

Previous managerial experience is required for the position. Salary is open. Applications should be addressed to: Personnel Officer, Personnel Office, 4th Floor, City Hall, 241 W. South St., Kalamazoo, Mich.

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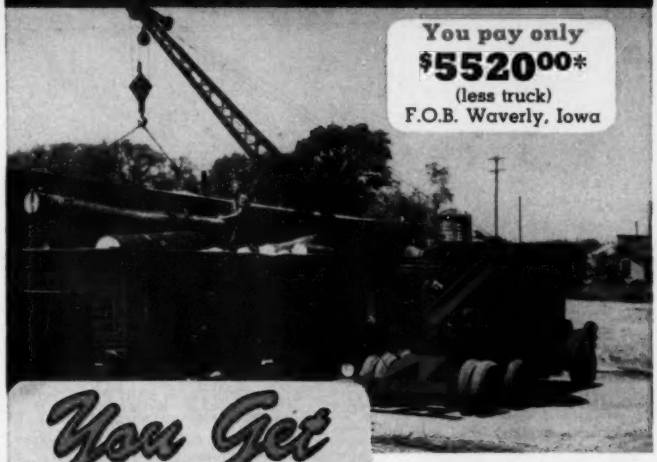

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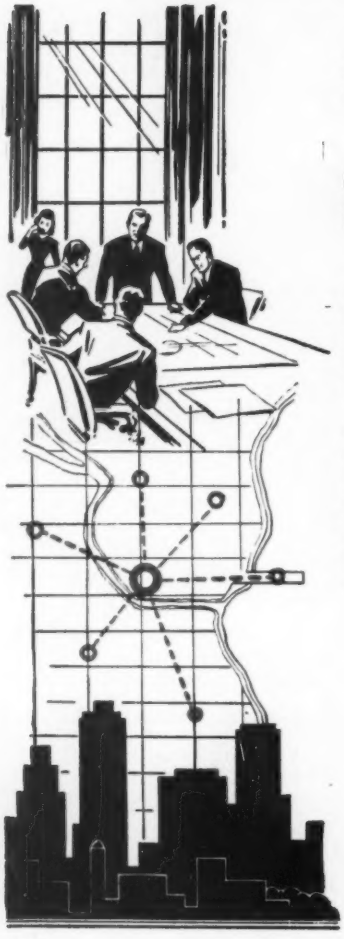

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News and Illustrations

Items of interest to city, town and county officials and others concerned with the economical construction and efficient operation of public improvement undertakings

Nation's Biggest Defense Plant Is Air-Mapped

Plant construction schedules for the Atomic Energy Commission's facilities in South Carolina are being advanced by many weeks through speedy air mapping. First maps for America's biggest defense plant survey were delivered recently—weeks ahead of ground survey schedules. The huge survey of the Savannah River Plant near Aiken, S. C., is being made by the Aero Service Corp., 236 E. Courtland St., Philadelphia 20, Pa., the firm which also mapped the Oak Ridge facility in 1942.

This area is believed to be the largest plant site ever mapped from the air.

First photo-mapping flights over the 20,000-acre tract were made early in January. Since then, Aero Service field survey crews have established a network of ground control elevations for compiling contour maps from the air photos. Compilation of the maps is done in laboratories and drafting rooms of the company's home plant in Philadelphia, with its high precision stereoplotting instruments.

These aerial topographic maps will go to the engineering department of the E. I. du Pont de Nemours and Company, which is designing and constructing the facility for the Government. The entire tract has been photographed and contour maps are now being compiled.

Ball Valves for Water Supply

D. G. Davis, president of the Davis Mfg. Co., announces the opening of the firm's new plant located at Third St. and Maple Drive, Beverly Hills, Calif. This plant will manufacture ball valves, cone and butterfly valves, and hydraulic equipment up to and including 24 inches. The plant also has special facilities for the manufacture of control valves of various types for diaphragm, pressure, and solenoid operation.

The company reports that independent tests have been made to measure the ball valve's reliability. Leakage tests were conducted during and at the end of 1,000 operations under unbalanced pressure of 47 pounds per square inch. For all practical purposes, the ball valve remained tight throughout the entire test, the leakage increasing from practically zero at the start to a slight amount at the end of 1,000 full openings and closings. On the basis of an average of one valve operation each fourth day, the 1,000 operations would represent a period of approximately ten years of service.

The ball valve has an ingenious lever mechanism which gives the required variable torque at the proper time. The valve seats can be adjusted for leakage while the valve itself is under pressure. Its design is simple; it uses smaller Servo motors, and it is smaller in size and weighs less than many rotary valves. The operating mechanism is totally enclosed.

A few territories are open in the United States and foreign countries. Interested representatives in these areas should contact the Davis Mfg. Co.

A 13.3 hp gasoline engine powers this self-propelled saw.

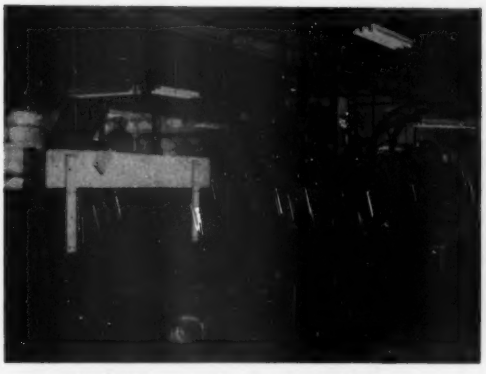
New Concrete Saw Is Self-Propelled

A new self-propelled saw for cutting concrete and asphalt has been announced by Concrete Sawing Equipment, Inc., 15 N. Oakland St., Pasadena 1, Calif. Known as the Model 51 self-propelled Concut, this new machine is employed for sawing concrete and asphalt streets, concrete floors, airport runways prior to breaking and removing the material, thereby assuring a smooth, straight edge for patching.

Other uses include sawing contraction joints, sawing for the installation of expansion joints, grooving for crack control, and grooving ramps and steps for safety.

The firm claims that the self-propelled feature increases the life of the cutting blade and speeds the sawing operation. Other features are a dash panel, showing water pressure gauge, spindle speed tachometer, motor throttle, the cut-off switch, and transmission control lever.

The Concut is powered by a 13.3 hp gasoline engine.



A view of the new plant recently opened in Beverly Hills, Calif., by the Davis Mfg. Co., manufacturer of ball valves, hydraulic equipment, and cone and butterfly valves.

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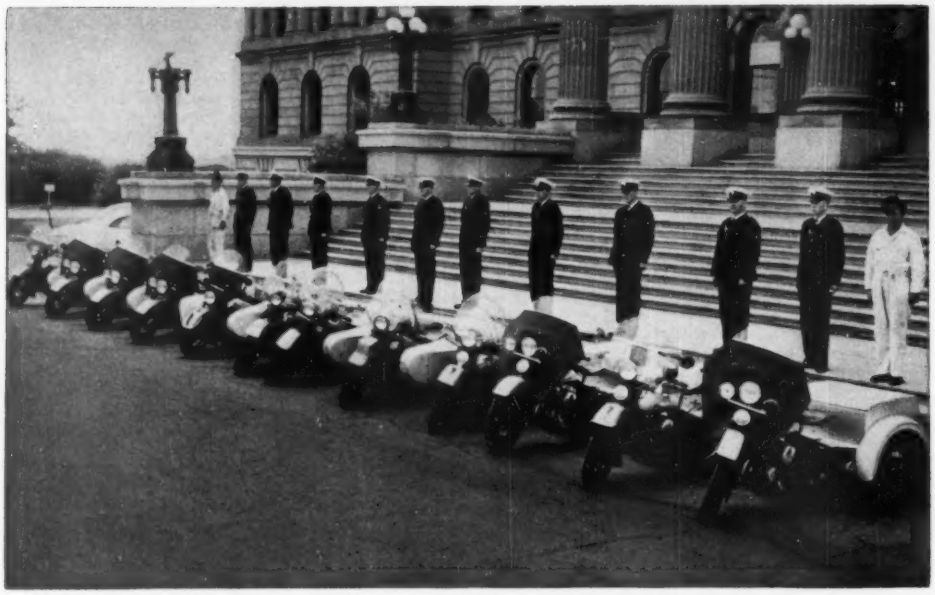

Edmonton, Alberta, Traffic Department. Left to right: Doug. Brown (Mechanic); Constables: Fernell, Ellis, Ursel, McCallum; Sgt. Woodward; Constables: Munson, Smith, Reid, McNichol, Moore.

SITUATED in the center of a booming oil region, Edmonton found traffic increasing so rapidly that existing police enforcement facilities were no longer adequate. And as many other cities in Canada and in the States have done, Edmonton turned to the use of more Harley-Davidson Police Motorcycles to keep down accident rates and tighten traffic control. Today, newly-equipped with latest model Harley-Davidson Sidecars and Servi-Cars, Edmonton police are setting a fast pace in traffic control and making their city one of the best policed communities in Canada.

Your city, likewise, can benefit from the use of more Harley-Davidsons. These big, powerful motorcycles are built especially for police work. Easy handling, quick pickup, road-hugging stability, oil-cushioned riding ease, effortless steering, 2-way radio and other features help the mounted officer do his duty more efficiently. Ask your dealer to call on you with complete information about the latest model Harley-Davidson Police Motorcycles, Servi-Cars and Sidecars.

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MOTORCYCLES POLICE BETTER TRAFFIC CONTROL ***SERVI-CARS***

Arsenical Herbicide For Soil Sterilization

Chem-Sen, a highly concentrated liquid sodium arsenate product that is used for soil sterilization, is manufactured by the Chemical Insecticide Corp., 57 13th St., Brooklyn 15, N. Y. A black opaque, viscous liquid, it weighs 17.75 pounds per gallon and its specific gravity is 2.080-2.140 Sp. Gr. at 68° F. This arsenical compound will give off poisonous fumes when heated to high temperatures as in a fire, but it is nonvolatile under all climatic conditions.

Chem-Sen prevents weed growth around warehouses, storage tanks, and also is used before laying asphalt surfaces for streets and airports. This solution kills various annual weeds and top growth of deep-rooted perennials only. Toxic residues remaining will not endanger humans or animals or valuable plants or trees.

Other uses for Chem-Sen are: killing trees or stumps, clearing tennis courts, right-of-ways, streets, power lines, airports, and race tracks.

For treating bare soil to prevent weed growth, a diluted solution of Chem-Sen can be applied by mixing ½ gallon of it with 4½ gallons of water to cover one square rod of soil.

Traffic Control

Luminescent Trafficones are reported to be extremely effective in controlling night traffic.

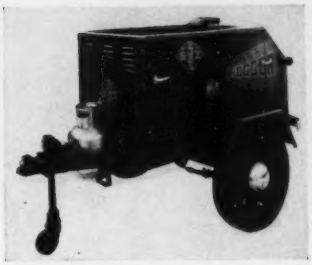
Made of safe collapsible rubber, the Trafficones have a life expectancy of more than five years and look like steel. The regular model is dip-coated in colored Latex-rubber base paint, and has a red top, yellow body, and black base. Luminescent Trafficones are all yellow, have Latex-rubber base paint, and are treated with Prismo Bead application to reflect a brilliant yellow for night application.

Other uses of Trafficones are traffic channeling, utility operations, excavation work, emergency barricades and street repairs, and line painting.

A recent application is a pilot adapter sign placed at the point of the Trafficone, especially for use at school zones. The body of the cone may say "School" zone and the 12 by 12 sign at the top say "Slow." This makes the device 40 inches high instead of 28 inches.

The photographs at the right compare the advantages of Trafficones. The upper picture shows how Trafficones provide more space and and require less handling, than the bulky barriers in the lower picture.

Trafficones may be purchased from the manufacturer, the Interstate Rubber Products Co., Los Angeles 18, Calif., or from the Enterprise Sales Corp., Burbank, Calif., or Western Marketing Service, 225 Angelique St., Weehawken, N.J.



This trailer-mounted fogger supplies fog-bodies insecticide fog at low temperatures and nuisance-free results.

Trailer-Mounted Fogger Has Improved Converter

The power of heavy-duty equipment is packed into the convenience of a trailer in the Rex Fogger manufactured by Haberman Industries, Inc., 306 Gaston Bldg., Hastings, Nebraska.

The Rex fogger has a specially designed boiler converter that makes it possible to employ low temperature, low pressure action that converts the insecticide solution into a dry, dense, full-bodied fog that does not create an oily film or other nuisance when it applies its insect-killing fog.

The fogger has an impressive record of achievement endorsed by city officials, health authorities and sanitation officials. The company will be glad to supply names and addresses of successful users of the equipment. It also has an informative booklet.

Film on Construction Of Pennsylvania Turnpike

"Pennsylvania's Great Highway" is a new 19-minute Kodachrome motion picture describing the construction of the extensions to the ultra-modern Pennsylvania Turnpike.

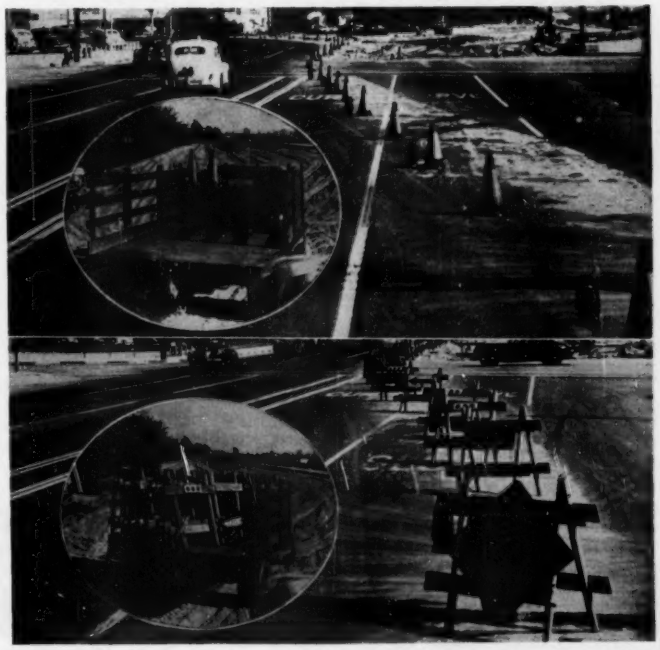
All phases of building a superhighway are shown in this 16 millimeter sound film. Scenes were filmed throughout the 327-mile length of the original section of the Turnpike, and the eastern and western extensions.

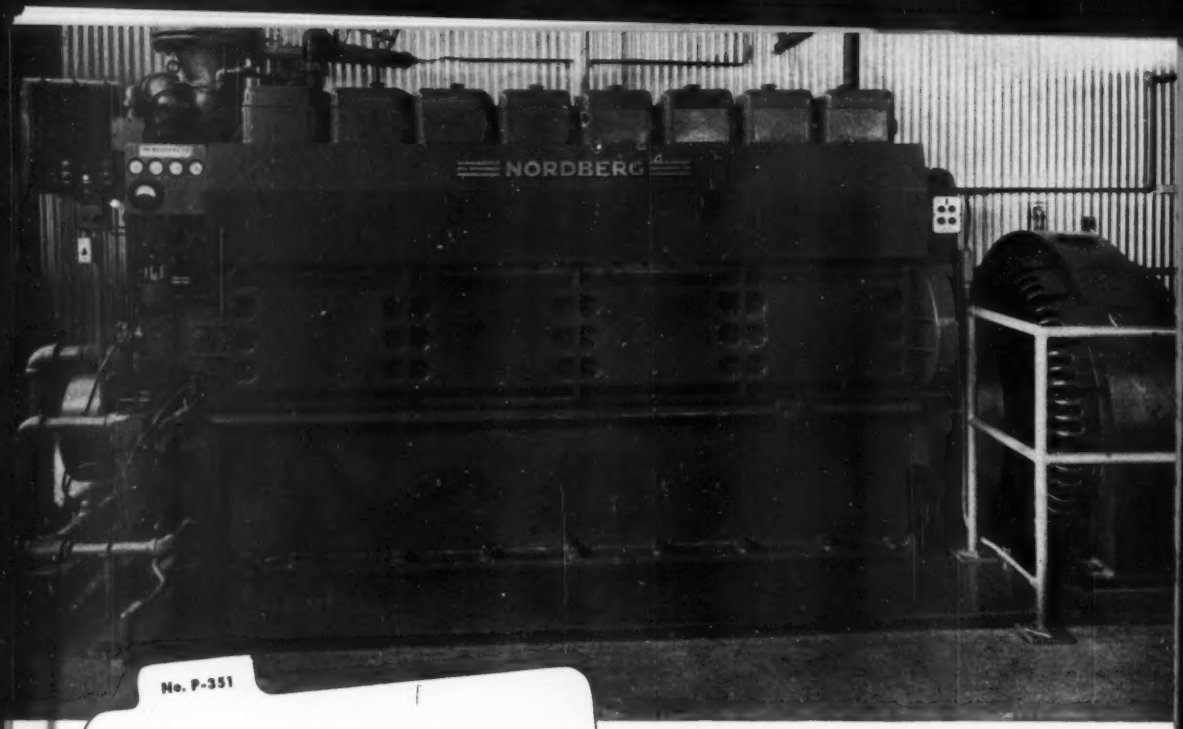
The Portland Cement Association produced the film, through the courtesy of the Pennsylvania Turnpike Commission. Copies of it may be secured for showings by writing to the Portland Cement Association, 33 W. Grand Ave., Chicago 10, Ill. Indicate the name and size of the group to which it will be shown and list at least three choices as to date of showing. A minimum of three weeks' notice should be given.

New Measuring Instrument

A new type instrument that measures quickly, easily, and accurately is the Rolatape which is operated by one man. This device shows inches and fractions, records number of feet measured, and is employed by appraisers, assessors, contractors, estimators, painters, police utilities, and realtors.

Manufactured by Rolatape, Inc., 1415 14th St., P. O. Box 1100, Santa Monica, Calif., the machine is compact, easy to carry, and fits in a brief case or a glove compartment of a car.





No. P-351

THE CASE OF THE STAND-BY DIESEL that paid for itself in *FIVE MINUTES*

THIS 8-cylinder 720 hp Nordberg Supercharged and Intercooled Diesel is connected to a 500 kw AC generator for emergency power needs at the big Owens-Corning Fiberglas plant at Santa Clara, California.

With the process at this particular plant, an interruption of power for more than 5 minutes' duration could raise havoc with the processing machinery. To guard against any such shutdown caused by a failure of purchased power, the Nordberg Diesel is ready to take over the plant load at once. To make sure full power is instantly available, the engine is constantly maintained at operating temperature. Once each day the engine is started, paralleled with purchased power, and the plant load taken over for a short period . . . assuring its readiness, and familiarizing personnel with rapid operating procedure.

Since this installation was made, eight main power failures have occurred without warning. *In each case, the Nordberg stand-by unit was on the line and supplying emergency power within three minutes.* This service has more than saved the Diesel's original cost.

Here, then, is proved Nordberg Dependability . . . *Ready for instant service!*

NORDBERG MFG. CO.
Milwaukee 7, Wis.

NORDBERG DIESELS FOR EVERY POWER REQUIREMENT . . . . 10 TO 9600 H.P.

For regular or emergency service, you can't beat the advantages of Nordberg Diesels . . . they can be added to the line quickly, and can be held ready for instant service without exorbitant stand-by expense . . . and in the complete line of Nordberg two and four-cycle Diesel engines, including both oil and gas burning types, you will find exactly the right unit to meet your present and future power requirements . . . in sizes up to 9600 hp.

P-351

BUSCH-SULZER
A DIVISION OF NORDBERG

NORDBERG
DIESEL ENGINES

Plastic Pipe for Water Supply in Chicago Housing Project

Because of its resistance to rot, rust, and electrolytic corrosion, Carlon plastic pipe is being used for the walls in the individual homes in a 600-unit La Grange Highland Housing Project, 15 miles west of Chicago. John Wendle, architect, of the Robert Bartlett Bldg. Corp., La Grange, Ill., stated that 550 homes have already been completed. Savings, in time, labor, and equipment made possible through the use of this pipe help to maintain low-unit cost of the homes in this extensive project.

Engineers of Wenz Brothers, Lyon, Ill., who are handling the well-digging and jet-well installation in this project, estimate the average well depth at 150 feet. In each case, the well is located adjacent to the garage foundation, and the pump and its accessories are installed in the garage which is attached to the house.

Carlon pastic pipe, made by Carlon Products Corp., 10139 Meech Ave., Cleveland 5, Ohio, is extruded from pure plastics compounds. The manufacturer asserts that it will never contaminate the drinking water systems, and that its smooth internal surface minimizes the frictional loss and will not accumulate scale. It weighs only 1/9th as much as steel pipe of comparable capacity.

Extruded from Polyethylene, flexible Carlon "EF" used for the two jet lines is available in lengths up to 400 feet (depending upon diameter).

This lightweight pipe is practically unbreakable at temperatures ranging from 70° to 140° F. and has a tensile strength of 1,400 psi. It is resistant to the growth of mold and bacteria and features negligible water absorption.

Each home has its own well in this project. And each well uses plastic pipe for a casing.

Four Pemco Street Luminaires

Three Pemco luminaires are offered with the caution that material shortages necessitate giving DO rated orders first preference. With socket change, the luminaires are for series 2,500-1,000 lumens or multiple 200-150 watt lamp. Also offered is a controlled beam series street-lighting luminaire for 2,500-lumen 6.6-ampere lamps. This is the PAR Sylvania type equipped with a bayonet socket featuring "a brand new reflector each time the lamp is replaced." Revised price list is available from the Philadelphia Electrical and Mfg. Co., 1200 N. 31st St., Philadelphia 21, Pa.

BASIC *for Civilian Defense!*

APPROVED FIRST AID EQUIPMENT FOR MUNICIPALITIES

We are the originators of the latest adopted design of military litters. This litter or stretcher is similar in design, but is especially constructed of non-critical materials to meet civilian demand. Inexpensive, yet equally sturdy.
Suppliers to the government of Thomas Arm and Leg Splints and accessories and the Conn Pneumatic Tourniquet, as illustrated above. Suppliers of medical bandages, dressings, and adhesive tape.

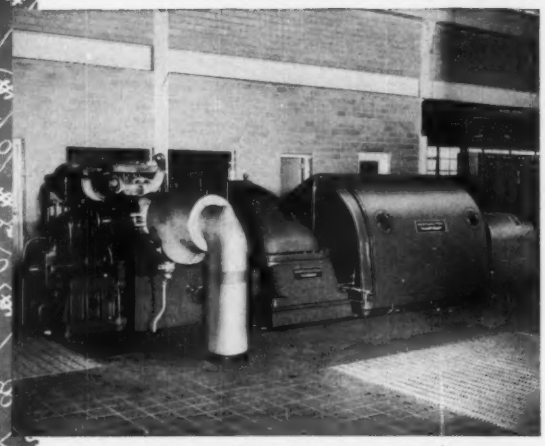
Write for information and quantity discounts. State your requirements.

AMBULATORY SPLINT CO. 392 Second Ave. New York 10, N.Y.

FACTS ABOUT THE

Most Profitable Turbine Generator Investment

YOU CAN MAKE...



One of two Worthington 4000 kw turbine generator sets installed in a mid-western municipal power plant, operating on 600 #G and 750 F.T.T. Steam exhausting to 28" Hg vacuum.

Worthington's Experience and Undivided Responsibility Assure Low Cost, Dependable Power

Builders of steam turbines for over 30 years, Worthington's Steam Turbine Division is backed by the experience and resources of the entire Worthington organization — recognized leaders in the power plant field for more than a century. In view of today's increased turbine pressures and temperatures — and the resulting needs for new and special materials — this vast, combined source of technical knowledge has proved of tremendous practical value in developing turbine design, construction and performance.

Generators Are Worthington's, Too

The generators used with Worthington Turbines are built by a Worthington subsidiary that has specialized in this field for over 45 years. This means that Worthington, as manufacturers of *complete* turbine generator units, assumes *undivided responsibility* for the coordinated design, assembly and performance of these units.

Before shipment, Worthington Turbines and Generators are assembled together *as units* for testing and adjustment — eliminating the necessity for doing this after installation. Also, for installation and service, Worthington turbine specialists and regular Worthington service men are always available from our District Offices throughout the country.

Check These Over!

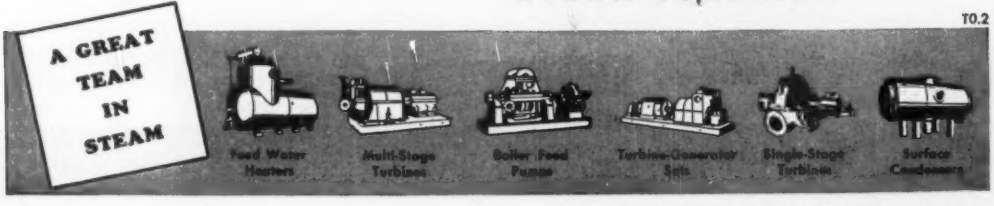
Adding up, Worthington's matchless power plant experience . . . huge manufacturing facilities . . . long specialization in both turbine and generator manufacture . . . undivided unit responsibility . . . and skilled technical service . . . are the best assurance you can get anywhere of efficient, economical steam turbine power.

Worthington makes turbines in a wide range of sizes and types, each one designed to make steam do more work. For details proving *there's more worth in Worthington*, contact your nearest Worthington representative. Or write to *Worthington Pump and Machinery Corp., Steam Turbine Division, Wellsville, N.Y.*

WORTHINGTON

STEAM TURBINES

TO.2



Production of two new service-utility trucks specially designed for use in public utility service and repair work has been announced by W. K. Perkins, sales manager of the motor truck division of the International Harvester Company, Chicago, Ill. These trucks feature the Aristocrat "troubleshooter" bodies exclusively designed for L-110, L-120, L-130, or L-150 International chassis. Of electrically-welded, all-steel construction, the Aristocrat body is factory-mounted, and its floor of one-piece ribbed steel provided with drains.

Moves from New York To Hamilton, Ohio

The Mosler Safe Company of Hamilton, Ohio, and 320 Fifth Ave., New York, N. Y., is transferring its key personnel from New York to the home office and factory in Hamilton. John Mosler, vice-president, and Langdon R. Littlehale, advertising director, will move to Hamilton, while Miss Marie MacLellan, assistant advertising manager, will remain in New York to supervise production of window displays and related material.

The firm has appointed Stockton-West-Burkhart, Inc., Cincinnati, to handle all phases of its advertising program, effective March 1.

The Mosler Company is the world's largest manufacturer of safes and vaults.

Civil Defense Insignia

Civil defense arm bands, as well as other types of official civil defense insignia, are being produced by the Norsid Mfg. Co., Inc., 21 Atherton St., Yonkers 1, N. Y., for the City of New York and for other cities and communities.

The arm bands are made of a rubber impregnated cloth coated on one side with a white pyroxylin plastic finish which is durable and easily cleaned. The official civil defense insignia appears in the center of the band.

A similar insignia also is being made on white coat card stock for fastening on automobile windshield visors. The firm also produces decal transfers with official insignia for identification on cars, trucks, and helmets.

The Norsid Mfg. Co. has divisions in its firm for textile printing, flocking, steel-die stationery engraving, silk screening, and jewelry stamping and finishing.

Elected President

Robert H. Owens has been elected president and general manager of the Roots-Connersville Blower Corp., 900 W. Mount St., Connersville, Ind., succeeding John Avery, who died unexpectedly on January 13.

Ralph R. Newquist was elected executive vice-president.

Mr. Owens has been actively connected with the development of the centrifugal line of blowers built by Roots-Connersville, and has had many years of experience in building blowers. He was named the concern's vice-president in charge of engineering and manufacturing in May, 1946, and in July, 1948, was elected to the board of directors.

Mr. Newquist, before joining the company, was manager of the Washington sales office for the Allis-Chalmers Mfg. Co.

Roots-Connersville is a subsidiary of Dresser Industries, Inc., whose headquarters are in Dallas, Texas.

Here is a *modern*, thoroughgoing method of renewing city sidewalks and protecting the valuable rental space underneath. Plastic Rock processes make an enduring job, waterproof where necessary; not affected by heat or cold; easy to apply; absolutely slip-proof wet or dry; applied without interruption of traffic; dry ordinarily in 24 hours. Used and praised by many large cities and property owners. Plastic Rock is packed complete in sealed barrels; ingredients are uniform; merely add water; U. L. I. field supervision is available without obligation.

Write for Our Report No. 220-36

UNITED LABORATORIES, Inc.
16820 Euclid Ave., Cleveland 12, Ohio

We shall be glad to give you a complete, reliable report on your sidewalk situation. No obligation.

ULI — PRODUCTS AND PROCESSES for PROTECTING PROPERTY
Field Representatives All Over The World

here is the <u>new</u>

DIMENSION OF SAFETY

for municipal records

Secure. Safeguarded. Stored in a small space for permanent protection.

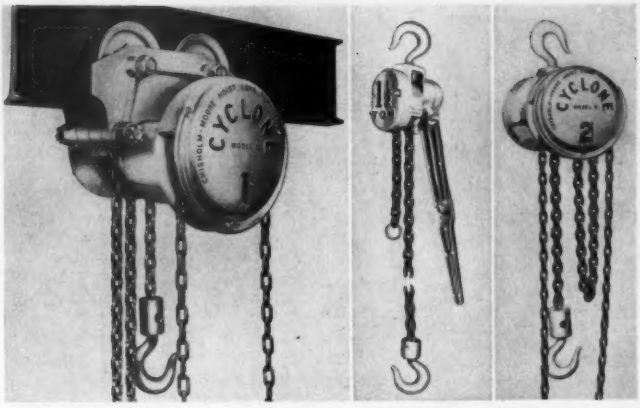
That's the story of important records when Burroughs microfilming reduces them to capsule form.

The price of this security is very low. And the time it takes to duplicate records on microfilm is very short. Thousands of documents can be recorded on one roll of microfilm, in as little as half an hour.

Call your Burroughs office for complete information about "the new dimension of safety" in record keeping. You will recognize its importance. Burroughs Adding Machine Company, Detroit 32, Michigan.

WHEREVER THERE'S BUSINESS THERE'S **Burroughs**

Modern microfilm equipment built by Bell & Howell, and sold by Burroughs, is the finest obtainable. It reflects Bell & Howell's acknowledged leadership in the field of precision instruments for fine photography



Pictured above at left is the 1-ton trolley hoist; center, 1½-ton CM puller, and at right, 2-ton highspeed hoist.

Machines for Lifting Heavy Loads

Machines that pull and lift, hoist and transport loads around municipal plants, shops, warehouses, and yards are made by Chisholm-Moore Hoist Corp., Tonawanda, N. Y.

CM puller, weighing only 13 pounds, lifts or pulls ¾ ton, and larger ones handle up to 6 tons. The cyclone hoist weighing 35 pounds lifts a ton; larger models hoist up to 10 tons or to 40 tons. They are available with trolleys that transport the loads horizontally. Electric hoists with or without trolleys also are available, as are overhead cranes. Complete literature describes all these essential municipal maintenance tools.

Fulton Firm's Officers

The Fulton Bag and Cotton Mills, P. O. Box 1726, Atlanta 1, Ga., at its annual stockholders' meeting, elected three new members of the board of directors and made changes in the firm's executive officers.

Clarence E. Elsas was elected president, succeeding William R. Elsas, who died recently. Benjamin Elsas was re-elected executive committee chairman, and Norman E. Elsas was reelected board chairman.

Jason M. Elsas, manager of the New Orleans plants, was reelected vice-president; Eugene A. Cronheim, forerly secretary-treasurer, vice-president and secretary; Julius B. Cronheim, manager of the Fulton plant at St. Louis and a company director, vice-president, and George L. Brogdon, who served as controller, was made treasurer.

The three new directors are: E. Monroe Hornsby, manager of the firm's New York office; Norman D. Cann, attorney, of Washington, D. C., who has been counsel for Fulton Bag for several years, and Fredric G. Barnet, now with the Dallas plant, who is a great grandson of Jacob Elsas, founder of the 80-year-old firm.

Steel Hardening Compound For Drills, Chisels

Hard-N-Tuff, manufactured by the Morsdon Sales Co., 511 Fifth Ave., New York 17, N. Y., is a scientific, new, quick, low-cost steel hardening compound in powder form. The firm reports that with war steel shortages and priority problems, Hard-N-Tuff can be used with cheaper steels.

This compound has certain vital chemicals that fuse deeply into the steel, giving it the properties of much higher grades. Less costly steels hardened with this product and used for dies, drills, punches, cams, jigs, fixtures, pawls, and impact parts, will perform and outlast the more expensive steels generally used for the same operations.

With Hard-N-Tuff, the manufacturer states that you can drive a nail through 3/16-inch cold rolled steel; drill holes in automobile spring steel with a sharpened bolt, and punch a hole in ⅜-inch tool steel with a ½-inch cold rolled rod. This product is designed to keep drills, chisels, cutters, and tools sharper for a longer period of time.

Save money
ON STREET SWEEPING
with
MOBIL-SWEEPER

Sweep your streets cleaner at less cost with dependable Mobil-Sweeper. Its large dirt hopper and special gutter broom design do a better job faster. It's the safest motor sweeper built. Sweeps all pavement even on steep hills. Let Mobil-Sweeper help balance your budget. Write on your letterhead for illustrated catalog.

Dealers in principal cities.

MOBIL-SWEEPER
THE CONVEYOR CO
3240 E. SLAUSON AVENUE
LOS ANGELES 58, CALIF.

ROSS
AUTOMATIC
VALVES

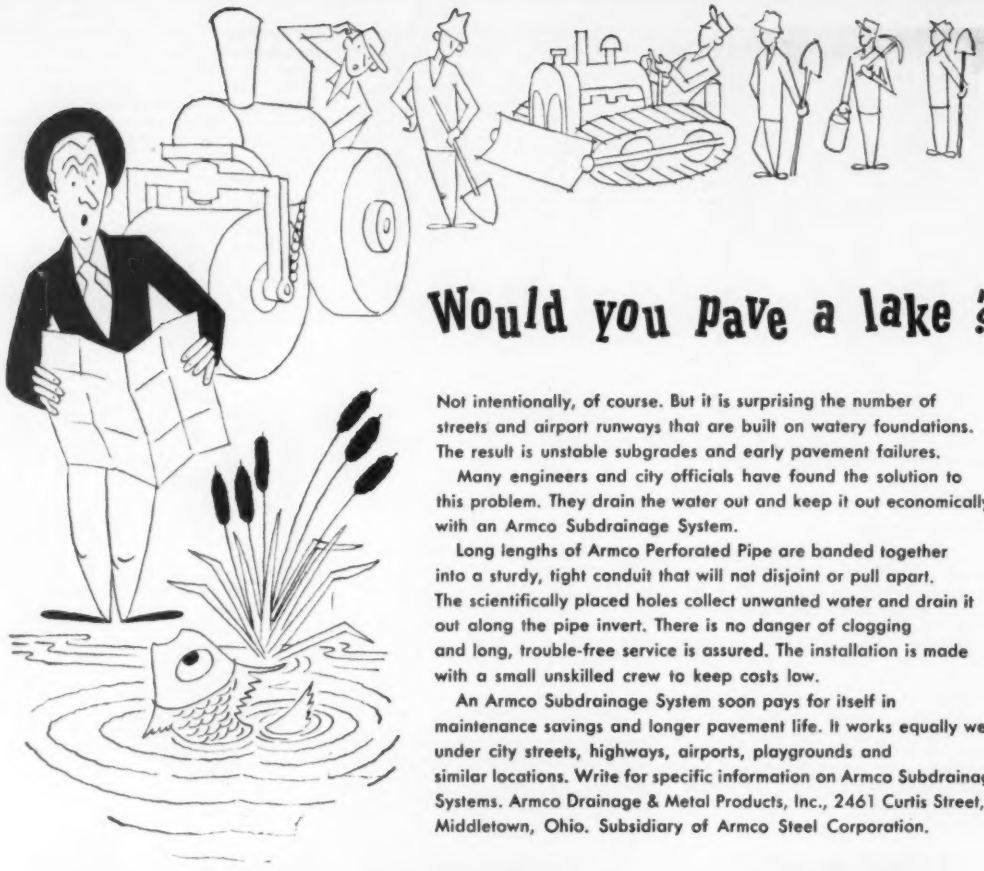
Altitude Valves
For control of elevation and heads into and out of tanks basins and reservoirs, hydraulic control.
1. Single acting.
2. Double acting.
3. Combination assembly for three or more automatic operations.
4. Can be equipped with electric and manual controls.

Combination Valve
This valve will permit flow in one or both directions acting as
1. Pressure Reducing and Relief Valve.
2. Pressure Reducing and Altitude Valve.
3. Relief and Altitude Valve.

Remote Control Valve
Electric remote control — solenoid or motor can be furnished. Adapted for use as primary or secondary control on any of the hydraulically controlled valves.

Also—
Pressure-Reducing Valves, Relief and Surge Valves Back-Pressure Valves, Etc.

Established 1879
ROSS VALVE MFG. CO.
Incorporated
P.O. BOX 596, TROY, N.Y.



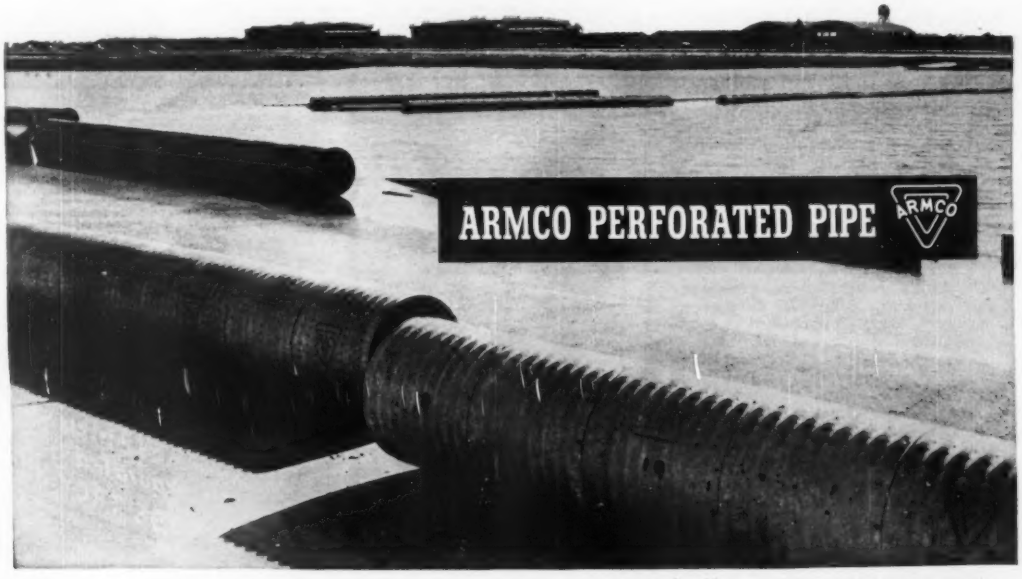
Would you pave a lake ?

Not intentionally, of course. But it is surprising the number of streets and airport runways that are built on watery foundations. The result is unstable subgrades and early pavement failures.

Many engineers and city officials have found the solution to this problem. They drain the water out and keep it out economically with an Armco Subdrainage System.

Long lengths of Armco Perforated Pipe are banded together into a sturdy, tight conduit that will not disjoint or pull apart. The scientifically placed holes collect unwanted water and drain it out along the pipe invert. There is no danger of clogging and long, trouble-free service is assured. The installation is made with a small unskilled crew to keep costs low.

An Armco Subdrainage System soon pays for itself in maintenance savings and longer pavement life. It works equally well under city streets, highways, airports, playgrounds and similar locations. Write for specific information on Armco Subdrainage Systems. Armco Drainage & Metal Products, Inc., 2461 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation.



Rockwell Appointments

R. K. Laurin

A. M. Dooley

J. H. Judge

The appointment of James H. Judge as sales manager of the firm's gasoline, oil, and industrial meter line, has been announced by A. J. Kerr, vice-president of sales for the meter and valve division of the Rockwell Mfg. Co., 400 N. Lexington Ave., Pittsburgh 8, Pa. Mr. Judge will have his headquarters in Pittsburgh.

M. D. Gilbert, Tulsa district manager, reports that A. M. Dooley has been named as water meter sales supervisor for the Tulsa area.

Appointed assistant advertising manager of the meter and valve division was R. K. Laurin, according to an announcement by W. F. Weimer, advertising manager. Mr. Laurin will be in charge of advertising production and office procedure.

The election of J. Richardson Dilworth to the firm's board of directors was announced by W. F. Rockwell, Jr., president of the organization. Mr. Dilworth also is a director of The Concrete Brick Co. and The Carbon Limestone Co., both of Lowellville, Ohio. Since 1946, he has been with Kuhn, Loeb and Co., New York, N. Y.

P.T.L. Election

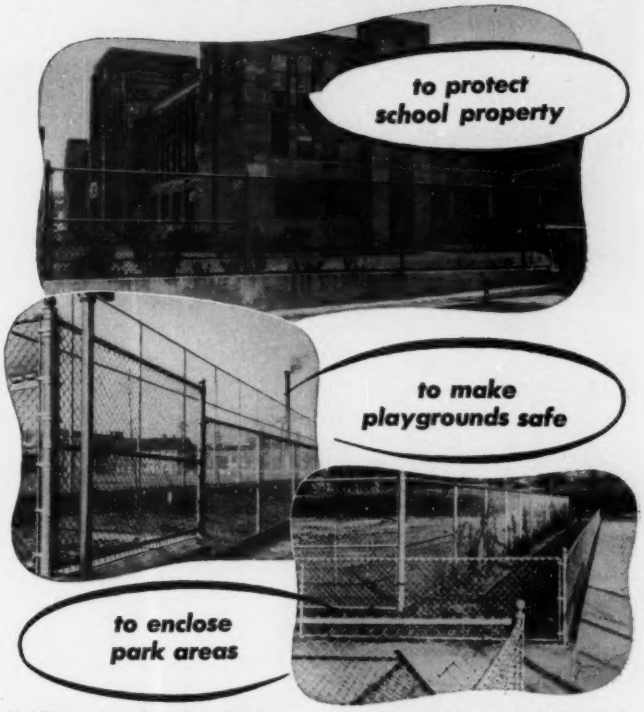
The Pittsburgh Testing Laboratory of Pittsburgh, Pa., announces the election of A. R. Ellis as chairman of the board; C. M. Houck, president, and R. C. Emmett, vice-president.

Fire Alarm System

One of the most extensive self-contained fire alarm systems in the automotive industry will be used by the Chrysler Corp.'s Highland Park assembly plant, Dearborn, Mich., reports The Gamewell Co., Newton Upper Falls 64, Mass., manufacturer of the equipment.

The plant will have 106 strategically located fire alarm boxes and its own four-circuit central station. This central station will be connected to Dearborn's municipal fire department and will automatically retransmit coded signals as they are turned in.

How American Cities are using CYCLONE FENCE



● All over America, city officials are realizing that adequate fencing is essential to well-run schools, playgrounds, parks, etc. And all over the country in hundreds of installations Cyclone has proved its superiority. Under the most severe conditions of climate and terrain Cyclone gives efficient, long-lasting service. No matter what your fencing problem is—there is a type of Cyclone Fence to fit your needs.

For further information send for a copy of our free 32-page booklet on fence. It is profusely illustrated and gives complete information on the entire Cyclone line. And for expert advice on your own fencing problems call on our engineers. There is no obligation. We have sales offices in most principal cities.

NO JOB IS TOO LARGE
NO JOB IS TOO SMALL
FOR CYCLONE*

CYCLONE FENCE DIVISION
(American Steel & Wire Company)
WAUKEGAN, ILLINOIS · BRANCHES IN PRINCIPAL CITIES
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

USS CYCLONE FENCE

Cyclone is the trade-mark name of fence made only by Cyclone Fence Division. Accept no substitute.

CLIP THIS COUPON — SEND IT TO

Cyclone Fence, Waukegan, Ill., Dept. B-31
Please mail me, without obligation, a copy of "Your Fence."

Name.....
Address.....
City.....State.....
I am interested in fencing:
☐ Industrial; ☐ School; ☐ Playground; ☐ Residence.
Approximately .....feet

UNITED STATES STEEL

Bethlehem Tar-Enameled Water Pipe in new 2000-ft line in Queens, New York City. Contractor: Oak Hill Contracting Co., Glendale, Queens.

Borough of Queens Gets New Water Line

TO supplement the piping system already serving a growing residential area in Queens, the City of New York recently authorized the installation of a new steel water main. This line originates at 82nd Avenue and 139th St. It is approximately 2000 ft in length, and is built of 60 in. x ½ in. Bethlehem Tar-Enameled Water Pipe. In addition, Bethlehem supplied 190 ft of 72 in. x ⅜ in. jacking pipe.

Because of its strength, long service life, freedom from leakage and over-all economy, Bethlehem Tar-Enameled Water Pipe is the ideal pipe for any type of water-distribution problem. It is resistant to incrustation and corrosion, because it is generously coated on both surfaces with a smooth layer of coal-tar enamel. It can be handled conveniently, and leak-proof girth seams can be obtained by welding, riveting, or by mechanical coupling. Bethlehem Tar-Enameled Water Pipe comes in 40-ft lengths, and is made in diameters from 22 in. up to the largest permitted by common carriers.

For complete details about this top-quality pipe, get in touch with the nearest Bethlehem sales office.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

★ BETHLEHEM STEEL ★

BETHLEHEM *Tar-Enameled* WATER PIPE

Latest Siebert Police Patrol

In the new Siebert Aristocrat Ford police patrol for 1951, the partition, back of the two seats in the driver's compartment, has a sliding glass window protected with steel screen.

From the partition to rear doors is 94 inches, inside width 60 inches, and height 55 inches. The two rear doors open 48 inches wide and 45 inches high. Overall length is 16 feet, the width 76 inches and the height 84 inches. A booklet is available from The Shop of Siebert, Inc., 654 Southard Ave., Toledo 2, Ohio.

Portland's Streets Safer With Brilliant Traffic Signs

Streets in Portland, Ore., are safer than most because the city is using the most brilliant traffic signs in the country. Where extra illumination is needed, the city uses fluorescent lights to make the signs easily readable from over 200 feet away.

Details of the up-to-date signs were explained by L. C. Marshall of the Sola Electric Co., Chicago, whose pioneering research was important to the development of these signs by the Elwood Wiles, Co., Portland manufacturer.

The signs consist of four major parts. These are the cold cathode fluorescent tubes, of which there are two; a translucent, white plexiglass front on which the sign is printed, a transformer, and an aluminum box containing the unit.

The Sola transformer is of the constant voltage type and eradicates the problem of voltage variations. The unit takes incoming voltage varying anywhere from 95 to 130, and converts it to the specific voltage for which the light tubes were designed.

Portland traffic engineers say there have been no failures, no matter what the weather, and that maintenance is simple.

The sign is manufactured by the Elwood Wiles Co., Portland. The Sola Electric Co. makes the transformer for it.

Moves to New Office

The firm of Hill and Hill, engineers, moved March 5 from 21 E. Main St., North East, Pa., which it occupied for 50 years, to the first floor of a building at 8 Gibson St. North East.

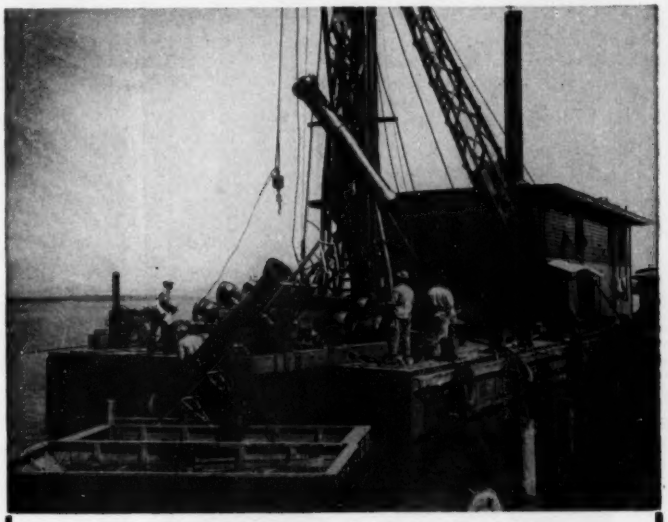
The new quarters will provide for additional space and for laboratory facilities for sewage, water works and industrial water analysis and investigation.

Photostatic Copies

The Photostat Corp. of Providence 1, R. I., reports that advantages of copying by means of its photographic method include accuracy, economy, speed, and permanency. The copies are erasureproof, and fraudproof. The Photostat is a machine which will make copies of written, printed, drawn, typewritten, blueprinted, or photographed matter.

The machine has a large camera with a magazine for holding a roll of sensitized paper and compartments for developing and fixing the prints. Its equipment is arranged for mechanically focusing to the desired size of copy which may be enlarged or reduced or copied at original size.

The Photostat is loaded with a roll of sensitized paper and the subject photographed through a lens with prism attached to the front of the lens.



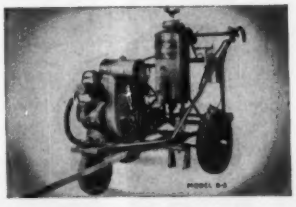
16" Water Pipe Line under John's Pass, Fla., being installed in 35 feet of water

BOYCE COMPANY

Submerged Pipe Lines All Over the World

MEMBER Phone 3-2530 CLEARWATER, FLA.

This is the Kelly-Creswell Model that will SOLVE your Municipal Zone-Marking Problems.



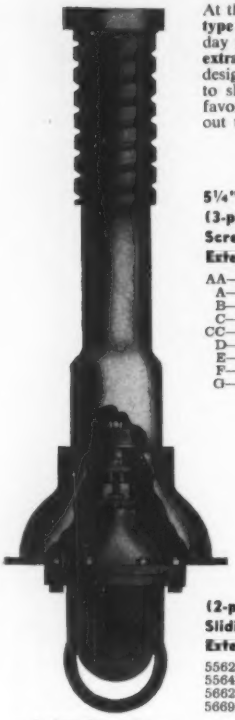
Uniform Cross-Distribution Clean-Cut, Attractive Lines

Pressure Cleaning Equipment Air-Actuated Traction.

More Highway Zone-Marking Material is applied thru K-C Equipment than thru any other make. ***There must be a reason.***

KELLY-CRESWELL CO., Xenia, Ohio

ADJUSTABLE VALVE BOXES



3-piece Screw Type 5¼" Shaft

At the left is shown our **3-piece screw type** valve box, designed for modern-day street traffic. Below: Our **2-piece extra heavy sliding type** valve box, designed to cover the stuffing box and to slide instead of rotate, is meeting favor with water companies throughout the country.

5¼" Value Box (3-piece Screw Type) Extension:

AA—1'10" to 2'4"
A—2'4" to 3'4"
B—3' to 4'
C—3'6" to 4'6"
CC—4' to 5'
D—3'6" to 5'6"
E—4' to 6'
F—5' to 7'
G—6' to 8'

2-piece Sliding Type 5¼" Shaft

(2-piece Sliding Type) Extension:

5562-S—2' to 3'
5564-S—3' to 4'
5662-S—2'6" to 4'
5669-S—3' to 5'

EXTENSION SERVICE BOXES

2½" Shaft

2½-inch Shaft

89-A—1' to 1'8"
90-B—1'6" to 2'2"
91-C—1'9" to 2'9"
92-C—2' to 3'2"
92-D—2' to 3'6"
93-D—3' to 4'
93-E—3' to 4'6"
94-D—3'6" to 4'9"
94-E—3'6" to 5'
95-E—4' to 5'6"
100-E—4'6" to 6'
100-F—4'6" to 6'6"

2½ and 3-inch Shaft

3-inch Shaft Extension:

1½—1'6" to 2'4"
2—2' to 3'3"
3—2'8" to 4'
4—3'10" to 4'10"
5—3'6" to 5'6"
7—4' to 6'

Besides these boxes we manufacture a great many other patterns and are continually adding new designs to take care of special problems in the water and gas field.

Write for Circular

BUFFALO PIPE & FOUNDRY CORPORATION
Box 55, Station B, Buffalo 7, N. Y.

YOU CAN BEAT THE A-BOMB!!

A 20-minute, 16mm sound motion picture that is a vital contribution to civil defense

With 20 minutes of your community's time you can equip them with the necessary precautionary techniques for safety and survival in case of atomic attack! YOU CAN BEAT THE A-BOMB provides *specific instructions on what to do.* It employs average family groups to demonstrate *how* and *where* to seek safety, *what* measures to employ against radiation, *how* to provide emergency treatment, *how* to dispose of contaminated food and clothing.

Numerous cities are already using this film to instruct their populations with the techniques of self-preservation. Get your copy *today.* YOU CAN BEAT THE A-BOMB is available at $80.00 for a ten-year lease period. Send your check or purchase order to:

McGraw-Hill Book Company
Text-Film Department
330 West 42nd Street
New York 18, N. Y.

ANTHRAFILT

(Reg. U. S. Pat. Off.)

A Filter Medium For All Purposes

Has outstanding advantages over sand and quartz media:

1. Length of filter runs doubled
2. Only about one-half as much wash water required
3. Less coating, caking or balling with mud, lime iron or manganese
4. Filters out of service less because of shorter wash cycle
5. Better removal of bacteria, micro-organic matter, taste and odor
6. Increased filter output with better quality effluent
7. Not just the top portion, but the entire bed, aids in filtering
8. Can be used in all types of filters using a filter medium
9. A perfect supporting medium for synthetic resins
10. An ideal filter medium for industrial acid and alkaline solutions
11. Decidedly advantageous for removal of fibrous material as found in swimming pool filters

Additional information, recommendations and quotations furnished upon request by

PALMER FILTER EQUIPMENT COMPANY
822 E. 8th St. Erie, Pa.
Engineers and Sales Agents

REPRESENTING —

ANTHRACITE EQUIPMENT CORP.
Anthracite Institute Bldg., Wilkes-Barre, Pa.

Regional Salesman

The Harley-Davidson Motor Co., Milwaukee 1, Wis. announces the appointment of Jas. H. Allin as regional salesman for Montana, Idaho, Washington, Oregon, and the provinces of Alberta and British Columbia.

J. A. Allin

Mr. Allin succeeds William Bringhurst, who is a Harley-Davidson dealer at Kennewick, Wash.

New Electric Cable Hoist

A new line of heavy-duty electric cable hoists in ½, 1, 1½, 2, 3, and 5-ton capacities will be sold under the trade name of "Bob-Cat." They will be distributed by Round Associate Chain Companies located throughout the country. The Round Associate group includes: The Cleveland Chain & Mfg. Co., Cleveland; The Bridgeport Chain & Mfg. Co., Bridgeport, Conn.; The Round Chain & Mfg. Co., Chicago; Round California Chain Co., So. San Francisco and Los Angeles; Seattle Chain & Mfg. Co., Seattle; The Southern Chain & Mfg. Co., Birmingham, and Woodhouse Chain Works, Trenton, N. J.

An outstanding Bob-Cat feature is its total enclosure of the high-torque Ohio motor within the cable drum. This protects against moisture, splashing liquids, weather, dust, and corrosive atmospheres. The Bob-Cat hoist line was originally designed by William F. Wright, well-known hoist engineer. For details and specification, write The Cleveland Chain & Mfg. Co., Broadway and Henry Sts., Cleveland 6, Ohio, or other Round Associate Chain Companies.

CHECK LEAKAGE with Simplex Waste-Water Detection Equipment

Breaks in pipe lines or leaking joints have always been an annoying problem to municipal engineers. Not only money but precious water is wasted. That's why it pays to detect the leaks in your water system . . . and there's no easier way to do it than with Simplex portable equipment!

The combination of Simplex pitot rod, manometer and recorder is ideal for checking water wastes and measurement of flow through pipe lines in hard-to-get-at places or where permanent measuring equipment is not installed. Each unit is light in weight and ruggedly designed to withstand the hard treatment of being moved from station to station.

For free Bulletin #50, write to Simplex Valve and Meter Company, Dept. 3, 6789 Upland Street, Philadelphia 42, Pa.

SIMPLEX

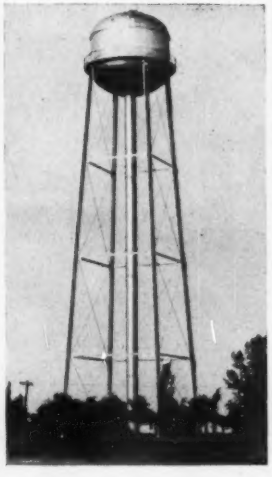
VALVE AND METER COMPANY

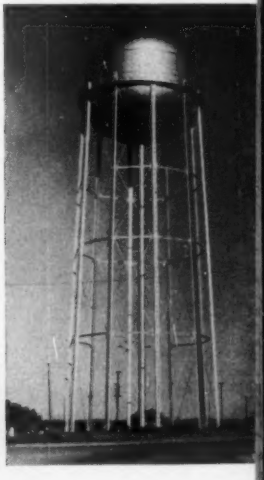
WHERE *Appearance* COMBINES WITH *Economy*

PITTSBURGH • DES MOINES

Double-Ellipsoidal *Elevated Steel Tanks*

Over a wide range of capacities up to a million gallons, the Pittsburgh-Des Moines Double-Ellipsoidal design offers low investment cost, excellent appearance and economical performance. It is one of the several P-DM Elevated Steel Tank types, meeting every water storage requirement.





Write for your free copy of our latest 24-page brochure, detailing many important aspects of modern water storage.

PITTSBURGH • DES MOINES STEEL CO.

Plants at PITTSBURGH, DES MOINES and SANTA CLARA

Sales Offices at:

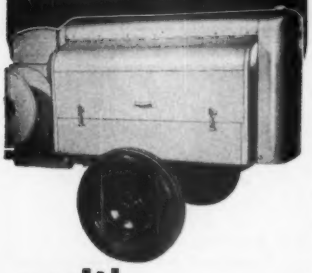
PITTSBURGH (22) ..... 3412 Neville Island
NEW YORK (7) ..... Room 915, 270 Broadway
CHICAGO (3), 1216 First National Bank Bldg.
SANTA CLARA, CAL. ..... 619 Alviso Road
DES MOINES (8), 913 Tuttle Street
DALLAS (1), 1217 Praetorian Bldg.
SEATTLE ..... 990 Lane Street

Now—more than ever!

smith

the *money-saving*

COMPRESSOR



smith MODEL 105-P

Lower first cost!
Lower upkeep!

In high-cost times, look to the Smith for compressor savings! Delivers 105 cu. ft. per minute—combines heavy duty with light weight; easily portable. Powered with the Chrysler Ind. 15 Industrial engine — 6 cyl., 4" bore, 5" stroke, 377 cu. in., 5" crankshaft, 7 main bearings, sodium cooled valves and Stellite valve seats for heavy duty, long life. Compressor valves—stainless steel disc type with Manganese Bronze seats. Improved type pilot valve and simplified control . . . *Write for literature and prices.*

ALSO the new SMITH 70-P AIR COMPRESSOR

Gordon Smith & Co.
Incorporated
425 College Street
BOWLING GREEN, KY.

C. G. Cooper Elected Vice-President

Charles G. Cooper, manager of the Washington office of The Cooper-Bessemer Corp., Mount Vernon, Ohio, was elected a vice-president at a recent board of directors' meeting. B. B. Williams, board chairman, reported that Mr. Cooper's election "is partially in recognition of his important role of directing the firm's efforts in this nation's defense program from the Washington office."

C. G. Cooper

Elected a director of the company in 1945, Mr. Cooper has been responsible for the sales and servicing of government diesel and gas engine contracts, as well as all direct relations between Cooper-Bessemer and agencies of the United States Government.

He is the son of the late C. G. Cooper, former president of the firm, and grandson of Elias Cooper, one of the company founders. He served as a field and service engineer with the Chapman Stein Co., former Cooper-Bessemer subsidiary until 1931, when he joined Cooper-Bessemer's New York office as sales engineer. In 1933, Mr. Cooper established the Washington office, which he has since managed.

Officers of W. & L. E. Gurley

Edgar H. Betts has been elected chairman of the board of W. & L. E. Gurley, 518 Fulton St., Troy, N. Y., 106-year-old manufacturer of engineering and surveying instruments. Charles A. Smart is president; Robert Gurley Betts, son of the chairman, is vice-president and treasurer, and Lester C. Higbee is general sales manager and director of engineering.

Standby Power Assured

A right-angle gear drive connected with a vertical pump that is electrically powered is insurance against the lapse of power through a transmission line breakdown or other causes. Shown above is one of these pumps, produced by the Johnson Gear and Mfg. Co., 8th and Parker Sts., Berkeley 10, Calif. A news story describing this machine appeared on page 199 of the February issue.

Detectron 505
PIPE DETECTORS

FIRST With a Metal Case
FIRST With Shielded Loops
FIRST With "Sure Grip" Handle
FIRST With Lifetime Guarantee

The new DETECTRON Model 505 locates, traces and centers pipes and cables with speed and accuracy. Small, compact, lightweight — with HEAVY DUTY PERFORMANCE.

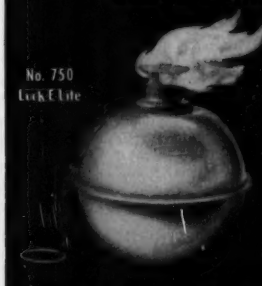
★ HIGHER QUALITY
★ LONGER LIFE
★ LOWER PRICE

TRIPLE VALUE!
For Complete Information Write for Folder 3-R

THE Detectron CO.
5637 CAHUENGA BLVD. NORTH HOLLYWOOD, CALIF.

EMBURY

The Torch that *Stays Lighted*



windproof . . . weatherproof

Write: EMBURY MANUFACTURING CO.
WARSAW, NEW YORK, U. S. A.

EMBURY
TORCHES & LANTERNS

"Long life... Low upkeep!" ...say users of

TOLEDO

2" Portable Power Pipe Machines

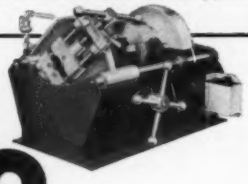
20 YEARS! "These two Toledo #999 Machines have been in continuous hard service for more than 20 years with only routine service attention," says P. E. Hayes of J. M. Hengy Electric Co., Dallas, Texas. "All our pipe threading tools, both power and hand, are and will be Toledo." Photo taken on Dallas Power and Light Co. job.

Speed Production...

It's *5 times faster than hand methods*—this rugged-performing TOLEDO No. 999 2" Power Pipe Machine! Job-proved by thousands of users—progressive outfits like the Texas contractors described above. A machine that's *right* for your high-production needs today!

Threads 2" pipe in 22 seconds ... cuts off 2" pipe in 10 seconds. Compact... portable... efficient... use it anywhere in your shop, plant or on the job. Your choice—Wheel or Knife Cut-Off. Toledo-built with the know-how of nearly 50 years... assuring *long life... low upkeep.* Write for catalog. The Toledo Pipe Threading Machine Co., Toledo, Ohio. New York Office: 165 Broadway, Room 1310.

25 MACHINES! Tooled for high production — Farwell Company, Inc., plumbing and heating contractors in Dallas, Texas, have 15 Toledo #999 Machines, 5 Toledo 2" High Speed Machines and 5 Toledo #1-2-4 Power Pipe Machines. Photo shows work on Southern Methodist University job.



RELY ON THE LEADER

TOLEDO

PIPE TOOLS . . . POWER PIPE MACHINES . . . POWER DRIVES

The

SEWER SCOOTER*

*Trademark

Sewers Clean Themselves With a Sewer Scooter

100% self-propelled for 6" to 96" sewers —is equally effective for all conditions and problems of sewer maintenance — completely cleans sewers of all sediments: rocks, gravel, sand and "hard-to-move" sludge.

Quick and efficient in operation. Investigate today! Ask for Bulletin.

Dealers—Some good territory open

Fitzgerald Engineering Co., Inc.

P. O. Box 289-G, Coral Gables 34, Fla.

LOW-COST WATER

from Caisson Wells

Caisson Wells yield large capacities of low-cost water. Well fields 10 to 150 feet deep are tapped economically, especially when in contact with a surface water body. Lifelong installation — requires practically no maintenance.

Write for information

CAISSON WELLS, INC.

Ground Water Engineers and and Contractors

33 W. 42nd St., New York 18, N. Y.

Gravity-fed and requiring no power unit, this traffic line spreader lays down lines in widths from 2 to 8 inches.

Traffic Spreader Lays Fractional-Inch Lines

The Universal Marine and Mfg. Corp., 137 Alexander St., Yonkers 2, N. Y., announces an improved sled-type spreader for its Controlled-Flo-traffic-line paint striper making it possible to lay down lines in fractional widths from 2 to 8 inches. The machine with its marked mobility-silence and ease of operation is particularly adapted to line street crossings, streets, highways, construction projects, and traffic safety zones.

The machine is gravity-fed, requires no power unit, has no hose to blow out, no jets to clean, as well as no pressure tank, gas engine or compressor, to complicate its operation.

The markers are effective in lining outdoor areas and indoor installations and hard-surface parking lots.

Noiseless in operation, the machine throws off no spray dust. It can be used on macadam, concrete, asphalt or wood surfaces. Offset in operation, the striper allows the operator a clear view, and the controlled flow insures a steady, even application to suit the needs of the operator.

Asphalt Institute Elects Executive Chairman

Frank R. Field, of Esso Standard Oil Co., was recently elected chairman of the executive committee at the recent annual meeting of the board of directors of The Asphalt Institute, 801 Second Ave., New York 17, N. Y.

Mr. Field joined Esso in 1923 and was manager of asphalt sales in New Jersey until 1937, when he was transferred to the New York staff to handle special sales of asphalt to roofing and industrial trades.

It's a quick, one-man job to repair a KENNEDY SAFETOP

Photos taken at N. Y. State Section meeting, A.W.W.A., April 1949

IN ONLY 11 MINUTES, a single man can easily and permanently repair a Kennedy *Safetop* sheared off in a traffic accident. It is the only hydrant with the easily-replaceable, threaded breaking ring that gives positive connection and rigid alignment to the two standpipe sections.

HIT BY A SMASHING IMPACT, the *Safetop* breaks cleanly and evenly at the breaking ring. Yet this ring gives a connection strong enough to take as hard a blow as the one-piece hydrant can . . . without damage.

ONLY A FEW COMMON TOOLS and inexpensive parts, contained in the *Safetop* Repair Kit, are needed for permanent repair. No digging is required and a compression-type valve prevents flooding or gushing.

BACK IN SERVICE after speedy, right-on-the-spot repairs, the Kennedy *Safetop* works as smoothly and efficiently as if nothing had happened. There's no danger of prolonged loss of community fire protection.

THE COMPLETE KENNEDY LINE

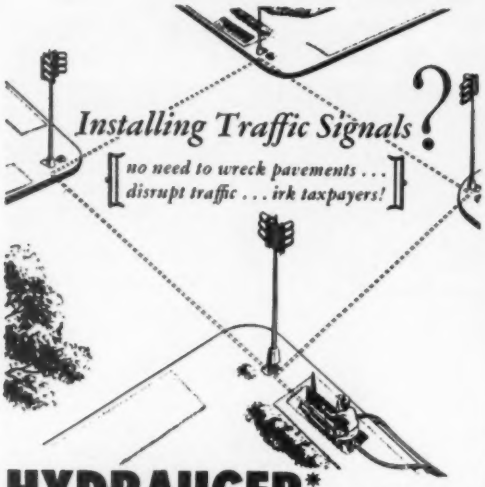
includes a wide range of A.W.W.A. valves and fire hydrants. When you standardize your community on KENNEDY, you are assured of the same high quality and dependability that have characterized all KENNEDY products for 74 years.

WRITE FOR SAFETOP BULLETIN 105

THE **KENNEDY**
VALVE MFG. CO. • ELMIRA, N.Y.

Est. 1877

VALVES • PIPE FITTINGS • FIRE HYDRANTS



Installing Traffic Signals?

no need to wreck pavements . . . disrupt traffic . . . irk taxpayers!

HYDRAUGER* *can't be beaten on work like this!*

*Reg. U. S. Pat. Off.

HYDRAUGER CORPORATION, LTD.
681 Market Street
San Francisco 5, California

GET CATALOG TODAY! HY-21B

FLORLINE

STREET, SAFETY, PARKING LINES $97.50
F.O.B. Detroit

Efficiently Made at Walking Speed!

Communities from coast to coast are drastically cutting the maintenance costs of traffic and parking lines with FLORLINE. Often pays for itself on the first job! Note these exclusive Florline advantages:

1 man, 1 hand operation. No attachments. Gravity feed.

Makes curved, straight, continuous or skip lines . . . 2, 3 or 4 inches wide with interchangeable carriages.

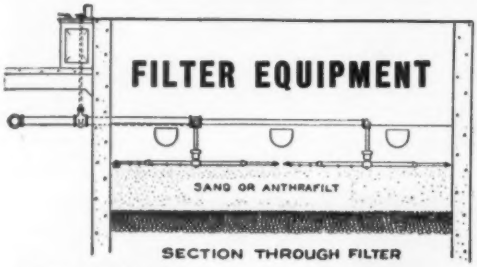
Holds 1½ gals. paint, lacquer, whitewash. Cannot spill. Portable efficient, speedy. Pays for itself quickly. Easy to clean, transport and store. FULLY GUARANTEED.

Write today for folder and list of users. Dept. MB.

H. C. SWEET CO.
12083 Woodbine Ave. Detroit 28, Michigan

PALMER

FILTER EQUIPMENT



SECTION THROUGH FILTER

Filter Bed Agitator Advantages

- Requires an average of 40% less wash water
- Eliminates mud balls
- prevents cracking and shrinking of the beds
- Produces "new" sand after short period of normal operation
- Enables you to increase filter runs up to 50%

Anthrafilt Advantages

- Doubles the length of filter runs attainable with sand and quartz media
- Requires one-half as much wash water
- Filters are out of service less because of the shorter wash cycle
- Coating, caking or balling with mud lime, iron or manganese reduced to the minimum

Write for Circular

PALMER FILTER EQUIPMENT CO.
P. O. BOX 1655, ERIE, PA.

STEEL STRAPPING

FOR STREET SIGNS

Send for information pertaining to our Introductory Offer—Material to attach 50 signs—including tools, dispensing reel, strapping, brackets, and bolts.

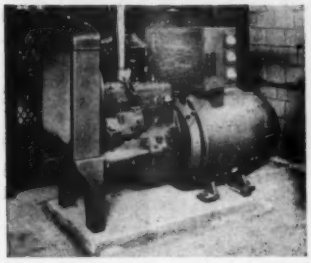
Erection crews like the greater convenience of this A. J. Gerrard method and budget wise departments like the economy it brings.

SS-4

STEEL STRAPPING

A. J. Gerrard & Co.
1952 HAWTHORNE DRIVE • MELROSE PARK, ILL.
(Chicago Suburb)

Two Standby Electric Plants In Lansing Fire Station

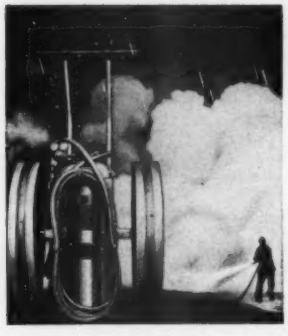


A standby Kohler electric plant has been installed by the Lansing, Mich., Fire Department to assure current for lighting, radio, and fire-alarm systems used by the department. It kicks in automatically in case of power failure. This is the second unit of this make. The other standby is ready for supplying lights, warning signals, and for opening the six steel and glass doors of the central fire station headquarters. Literature may be obtained from the Kohler Co., Kohler, Wis.

Dry Chemical Fire Engine

A wheeled portable dry chemical fire engine has been reported as a new product of the American-LaFrance-Foamite Corp., Elmira, N. Y. Power packed with 350 pounds of fire extinguishing dry chemical compound, it is discharged at a maintained operating pressure of 200 psi by 2,000 psi of dry nitrogen.

Called the Alfco 350, this machine extinguishes flammable liquid and electrical type industrial fires. The firm reports that the density of the dispersion of its sustained pressurized discharge has a phenomenal effect of cooling and insulating the operator from the intense heat of the fire. Added to the discharge range of from 20 to 25 feet is the normal gravity pull of the Alfco dry chemical which is heavier than air. Its natural downward direction, accelerated by the pressurized charge behind it, resists the updraft of the air currents caused by the flames.



"See . . . it's Bead Chain . . . just like yours"

NEW YORK CITY SCHOOLS ORDER IDENTIFICATION NECKLACES FOR ALL STUDENTS

BEAD CHAIN—used by the Armed Forces—will be worn by 2,000,000 students

An important move to safeguard the children of New York City was made by the Board of Education in ordering Identification Necklaces for all students in New York Schools. Each student will be issued a necklace carrying a tag on which is stamped the student's identity.

Taking a tip from Uncle Sam, who has had many years of experience with identification necklaces, the New York Board of Education chose BEAD CHAIN to carry the tags.

For years, our Armed Forces have selected Bead Chain for this duty. So flexible that it can't kink . . . attractive, smooth and comfortable . . . and very strong . . . Bead Chain also is preferred for religious chains and many other products made for personal wear.

Other Cities in various parts of the country are providing Bead Chain Necklaces for identification purposes.

Write us for complete information about Bead Chain Necklaces.

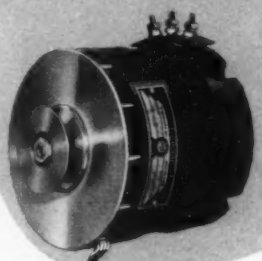
Bead Chain is made only by

The BEAD CHAIN* Mfg. Co.

* TRADE MARK

24 Mountain Grove St., Bridgeport, Conn.

Dependable Power
For
DISASTER COMMUNICATIONS SERVICE



Leece-Neville Alternator System Saves Maintenance, Materials and Manpower

A Leece-Neville AC-DC Alternator System delivers 25 to 35 amperes with the engine idling. This effects substantial gasoline savings and reduces engine wear. Current is delivered at a constant, fixed voltage, which lessens deterioration of scarce radio tubes and batteries.

Most important of all is the famous dependabilty of the Alternator System. To help insure vital communications in case of disaster, every mobile radio should be equipped with the Leece-Neville Alternator System.

For all the facts, write Dept 14,
The Leece-Neville Co., Cleveland 14, O.
Pioneer and STILL Quality Leader

Leece-Neville

J. W. Simpson Dies

J. Wilbur "Bill" Simpson, 67, executive vice-president since 1947 of the Mueller Co., Decatur, Ill., died suddenly on Jan. 16 in his office. He became ill at his desk at the plant while conferring with Otto C. Keil, secretary of the firm, and Hugh L. Baker, vice-president in charge of general sales.

J. W. Simpson

An employee of the firm for 51 years, Mr. Simpson started as an errand boy for the company in 1899, and advanced to various positions, becoming sales manager in 1917, a member of the board of directors in 1928, and vice-president in charge of sales in 1929.

Born Sept. 26, 1883 in Latham, Ill., Mr. Simpson was a director of Mueller, Ltd., the plant's Canadian firm. Before a merger of the Columbia Iron Works, Mueller plant at Chattanooga, Tenn., and the Decatur plant, he also was a director and executive vice-president of the Tennessee plant.

Concrete Hardener For New or Old Floors

A concrete floor casehardener, called Flintcrust liquid, is now available, and easily applied for new or old concrete floors. Manufactured by the Flexrock Co., Filbert and Cuthbert Sts., Philadelphia 4, Pa., the liquid is flushed over the floor and makes the surface up to ten times harder, increasing the resistance to traffic abrasion. It penetrates and fills the pores and hardens into a glass-like seal which cannot be re-dissolved and which prevents disintegrators from penetrating the concrete.

Flintcrust liquid can be easily applied by anyone, saves in cost of material and labor, and counteracts the initial surface attack caused by constant rough usage, the manufacturer reports.

Micrograph of a section of concrete floor, 16 times enlarged, showing "hills and dales" in surface. The hills are protected against abrasive traffic and the dales sealed against disintegrators by Flintcrust liquid.

WARNING...

THE MIRO-FLEX COMPANY will not substitute inferior materials in the manufacture of its established sign line, i. e., TRAFFIC CONTROL – HIGHWAY MARKING AND STREET NAME ASSEMBLIES. Users of these signs should anticipate their needs and allow for a reasonable delay. Raw materials are extremely critical, and we feel it our duty to ask MIRO-FLEX customers to safeguard their interests. We will do our very best to maintain stocks of standard stock items. Your inquiry invited.

MANUFACTURED BY
MIRO-FLEX CO., INC.
1824 EAST SECOND STREET—WICHITA, KANSAS

Newark, N. J. Uses NETCO
To Clean Catch Basins

PERFORMANCE is reason enough why many of the largest cities own one or more NETCO CATCH BASIN CLEANERS.

John Vacchiano, Newark road superintendent, says this: "In a peak day we have cleaned as many as 50 catch basins with our NETCO.

"After a recent record storm our NETCO more than proved itself in the many cases of emergency that resulted from debris washing into sewers. We're completely satisfied with our NETCO."

THE NETCO WAY IS THE MODERN CHEAP WAY OF CLEANING CATCH BASINS

Fill in and mail this coupon TODAY for complete information on NETCO CATCH BASIN CLEANERS ➔

NAME .....
TITLE .....
ADDRESS .....
.....

NETCO DIVISION
CLARK-WILCOX COMPANY
118 Western Avenue
Boston 34, Massachusetts

YOU GET PPD* -PIN POINT DETECTION

ONLY WITH

GOLDAK EQUIPMENT

The name GOLDAK, on electronic instruments, eliminates guesswork . . . it's your assurance of Pin Point Detection at all times, in any kind of weather. Throughout the world, with companies who need instruments that are accurate and durable, first choice is GOLDAK.

MODEL L46
SENIOR
LEAK DETECTOR

Detect costly leaks in water and low viscosity fuel lines, in their exact position. Completely portable, simple to operate. Latest electronic improvements and high quality parts, assures unequalled performance. Save time and labor, eliminate costly waste leakage with Goldak Model L46.

MODEL 620
BOX & VALVE
LOCATOR

Pin Point Detection of Goldak's Model 620, saves you time and money, with immediate location of Buffalo Boxes, Valves, Covers and Buried Metals. Large areas surveyed in a few moments. Sharp, clear signals. Untiring operation, weighs only 8 lbs. Sturdily constructed, all-weather use. High quality parts assures maximum sensitivity, low operating and nominal replacement costs.

Write for
FREE literature!

The GOLDAK Company
Leading Makers of
PIPE LOCATORS
Since 1933

1544 W. GLENOAKS BLVD.
GLENDALE 1, CALIF.

FOOT-OPERATED HYDRANT

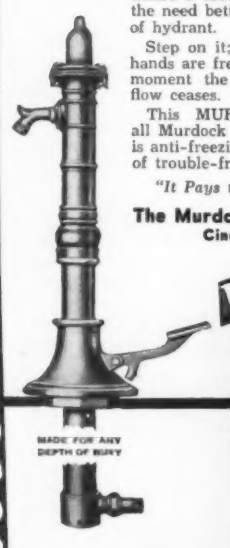
Every community has locations where a foot-operated hydrant fills the need better than any other type of hydrant.

Step on it; the water flows. The hands are free for other work. The moment the foot is removed, the flow ceases. There is no waste.

This MURDOCK Hydrant, like all Murdock Water Service Devices, is anti-freezing and will give YEARS of trouble-free service.

"It Pays to Buy MURDOCK."

The Murdock Mfg. & Sup. Co.
Cincinnati 2, Ohio



MURDOCK
OUTDOOR
DRINKING
FOUNTAINS
HYDRANTS
STREET
WASHERS

Civil Defense Planners
Police Chiefs
Fire Officials

Is your city prepared for
EMERGENCY DISASTERS?

COLLAPSI - COT
PATENT 2517443
can be used . . .

. . . to convert panel delivery trucks into emergency ambulances at very low cost . . .

. . . to convert police cars into auxiliary ambulance vehicles . . .

. . . where less maneuverable stretchers fail.

Information on how to create emergency and auxiliary ambulance corps with existing or low cost equipment is available from —
EDWARD F. HINKAMP

TEC Industries, INC.
(formerly Emergency Aids Company)
2018 WEST NORTH AVENUE
CHICAGO 47, ILLINOIS

PROTECT VALUABLE EQUIPMENT
from Sulphur Damage

Connelly
IRON
SPONGE

Protect economies gained by sewage gas utilization with Connelly Iron Sponge. Eliminate risk of pitting and corrosion damage in engines and other valuable equipment due to presence of H_2S in your gas. Connelly Iron Sponge gas purification is the efficient, low-cost method that has been the choice of leading gas companies for over three-quarters of a century. Widely used in the sewage gas field too.

Take advantage of Connelly's years of experience in solving gas purification problems. Write today, a Connelly engineer is at your service.

CONNELLY, INC.
3154 S. California Ave., Chicago 8, Illinois
Elizabeth, New Jersey • Los Angeles, California

3 way dependability

1. **IN CASE OF FIRE**—dependable, smooth operation . . . clear, large waterways . . . insure plenty of water. Hydrants open fast and easily *with* the pressure . . . and close without water hammer.
2. **IN CASE OF ACCIDENT**—stem held in place below main valve means no water loss due to a bent stem. One man can easily remove all operating mechanism for inspection or repairs.
3. **IN CASE OF LOW TEMPERATURES**—Eddy's positive drip action automatically drains hydrant barrel of all water when hydrant is closed . . . safeguards hydrant against freeze-ups.

EDDY
VALVE COMPANY
WATERFORD NEW YORK
A subsidiary of James B. Clow & Sons

Assistant Sales Manager

J. D. Newkirk

J. D. Newkirk has been promoted to assistant sales manager in charge of all customer relations for the Shunk Mfg. Co. of Bucyrus, Ohio.

With the firm for a year and a half, Mr. Newkirk formerly had been with the Fruehauf Trailer Co., and the Thew Shovel Co., in charge of distributor liaison.

A.W.W.A. Conference

The annual American Water Works Association conference is scheduled from April 29 to May 4 in Miami, Fla. Chairman of the transportation commitee, E. A. Sigworth of the Industrial Chemical Sales Division, West Virginia Pulp and Paper Co., 230 Park Ave., New York 17, N. Y., reports that his group has completed plans for transportation.

A pre-convention trip will be to New Orleans, April 25, 26, and 27. Havana, Cuba, will be the destination of convention delegates taking the post-convention tour by air or ship.

Make your reservations early.

YOUR EXPENSIVE OFFICE MACHINE IS SAFE ON A "NON-CAPSIZABLE" OFFICE MACHINE STAND

Tusco

TUSCO STANDS ARE ADAPTABLE TO OVER 95% OF ALL OFFICE MACHINES

Tusco Stands provide a combination of strength, stability, operator comfort and beauty available in no other office machine stand. Equipped with an adjustable ball foot the TUSCO Stand provides solid support for the heaviest, most active machines on the most uneven floors.

TUBULAR SPECIALTY MFG. CO.
1940 Stanley Ave. Detroit 8, Mich.
ESTABLISHED 1921

for **low-cost** pumping

JAEGER invites 5-way comparison with any other pump

1: Priming speed
2: Vacuum, capacity and pressure
3: Gallons water moved per gallon of fuel
4: Self-cleaning ability
5: Hours of service per dollar invested

Latest type 2" and 3": Compact heavy duty units with weather-shielded engines.

4" to 10" Portables: Specially housed for easy access to engines, larger fuel tanks.

Aluminum Pumps: with replaceable liners, stainless steel shell fitting. 1½", 60 lbs., up to 5700 gph.—2", 105 lbs., 9000 gph.

Jetting Pumps: For pressures to 275 lbs. Also 2" to 8" pressure pumps for supply work. Diaphragm pumps for sand and mud.

Ask for Complete Pump Catalog

THE JAEGER MACHINE CO.
505 Dublin Avenue Columbus 16, Ohio
Distributors in 130 Cities of U. S., Canada

AIR COMPRESSORS • MIXERS
HOISTS • AGGREGATE SPREADERS
BITUMINOUS PAVERS
CONCRETE SPREADERS • FINISHERS

On this modern New York City parkway it's

AMPLEX STREET LIGHTING LAMPS!

MANY OF THE LARGEST American municipalities and public utilities have standardized on Amplex Street Lighting Lamps both for superior lighting and for the extraordinary savings that they bring to every installation. These lamps are specially designed and built to survive the vibration and shock of road traffic and to maintain a maximum percentage of light output throughout their long-burning life.

Amplex offers you the most complete line of street lighting lamps ever put on the market . . . a type and wattage for every kind of service. Among these, Amplex Weatherproof Bulbs are probably today's fastest-growing specification. Amplex Weatherproof Lamps are formed of "hard glass," ending failures due to climatic conditions . . . providing maximum dependability and savings.

For full facts about Amplex Street Lighting Lamps and their superior performance, write Amplex Corporation, Dept. K-3, 111 Water Street, Brooklyn 1, New York.

AMPLEX

Sealed-Beam Reflector Lamps, Colorbeam Lamps, Spotlites and Floodlites, Industrial Infra-Red Heat Lamps, Vibration and Rough Service Lamps, Street Lighting Lamps, Traffic Signal Lamps, Incandescent Lamps, Fluorescent Tubes, Display Accessories.

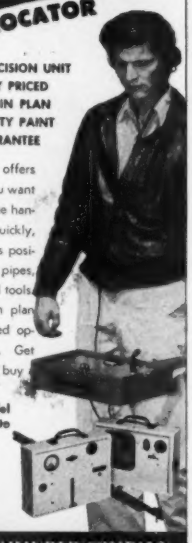
YOUR BEST BUY

NEW PATHFINDER PIPE LOCATOR

★ POWERFUL PRECISION UNIT
★ ECONOMICALLY PRICED
★ LIBERAL TRADE-IN PLAN
★ BRILLIANT SAFETY PAINT
★ LIFE TIME GUARANTEE

Only PATHFINDER offers all vital features you want . . . combined in one handy, compact unit. Quickly, accurately it locates position and depth of pipes, tees, valves, buried tools. The liberal trade-in plan gives you an added opportunity to save. Get the facts and you'll buy PATHFINDER!

Write! State model and year of locator to be traded.



PATHFINDER COMPANY
1726 Beverly Drive • Pasadena 7, California

ROADMASTER Street Sweeper WIRE

High Scleroscope Rating
Uniform temper.

Specially processed for high fatigue — against breakage. Long wearing. Conveniently cut and delivered in 100 and 200 lb. boxes. Prompt shipment from stock of all standard sizes.

This gutter broom wire will prove an economy in your service.

"MORE MILES PER BRUSH"

JOHNSON
Steel & Wire Co., Inc.
Worcester 1, Massachusetts
New York Akron Chicago Detroit
Los Angeles Toronto

Attends World Conclave Of Hydraulic Group

Francis S. Friel of Albright and Friel, Inc., consulting engineers, 121 S. Broad St., Philadelphia 7, Pa., is a representative of the United States attending the World Congress of the International Association for Hydraulic Research in Bombay, India. He also is a representative at the Fourth International Congress on Large Dams in New Delhi, India.

F. S. Friel

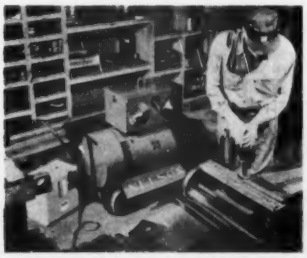
The firm, among its work, handles municipal engineering, water supply and purification, sewerage and sewage disposal, investigations, valuations, real estate developments, street paving, city planning, power and light dams, and design and supervision of construction.

Power Units Available For Stud Welding Material

Development of two special power units, specifically designed for use with Nelson stud welding equipment, has been announced by George E. Gregory, president of the Morton Gregory Corp., Lorain, Ohio. One unit is a motor-operated generator set capable of welding studs up to and including ⅝-inch diameter. The other is a specially designed battery-operated unit which can be used for installing studs up to ½ inch in diameter with the Nelson automatic stud welding gun.

In stud welding performance, the Nelson power unit is equivalent to two conventional 400-ampere generators in a parallel, although its cost is approximately one-third less than the two units. The compact unit weights 800 pounds, and its size is comparable to a 200-ampere welding generator.

The Nelson stud welding battery unit requires only a 110-volt a.c. convenience outlet for its operation. This unit weighs 1,100 pounds and consists of 12 6-volt, 150 ampere top quality wet storage batteries.



This new Nelson motor-operated generator was especially designed for stud welding of fasteners up to and including ⅝-inch diameter.

1 man, 1 machine speeds garbage disposal
with rubber-tired TOURNADOZER
SPREADS, COMPACTS, COVERS GARBAGE
giant tires compact refuse into minimum space . . . big blade spreads dirt in even layers

Many communities are now cutting costs with rubber-tired Tournadozer on landfill garbage disposal because 1 man and 1 machine handle *all operations*. Tournadozer excavates disposal trenches . . . spreads truck-dumped garbage. 21.00 x 25 tires compact refuse in normal back and forth travel. Big blade covers garbage with dirt from trench walls, or dozes in dirt as it excavates next parallel trench.

Handles scattered jobs

Fast 19 m.p.h. speed, plus "go-anywhere" ability, allow Tournadozer to drive cross-town in a matter of minutes to handle scattered municipal maintenance assignments. Result: more jobs handled each day per tax dollar . . . less manpower and machines diverted from other projects. Ask your LeTourneau Distributor for all the facts on how you can save money and time on municipal jobs with versatile Tournadozer. Write or call him TODAY.

Clip and Mail today to:
R. G. LeTOURNEAU, Inc., Peoria, Ill.
for information on:
☐ 122 h.p. Model D Tournadozer or
☐ 180 h.p. Model C to be used for:
Name
Title
Department
City
State

LeTOURNEAU TOURNADOZERS
IT'S RUBBER THAT PUTS THE ACTION IN TRACTION

Another Nichols City

BUFFALO, N. Y.

purchases 400 Ton Modern Nichols Monohearth
Mechanically Stoked Refuse Incineration Plant

Consulting Engineers
GREELEY & HANSEN
Chicago, Illinois

FREDERICK W. CRANE
Commissioner of Public Works

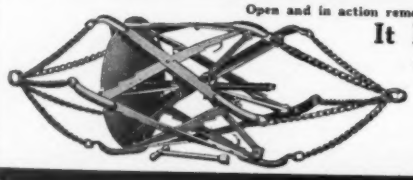
Nichols Engineering & Research Corporation
70 Pine Street · New York 5, N. Y.

Canadian office
1477 Sherbrooke St. W., Montreal 25

Pacific Coast office
40 So. Los Robles Avenue, Pasadena 1, Calif.

EXPANDING ROOT CUTTER & SEWER CLEANER

Open and in action removing roots and caked sediment like this.



It Fits in on Every Sewer Cleaning Job

Adjusted in 30 seconds to fit any sewer from 8 to 30 inches.

Will clean the entire sewer wall, top, and sides as well as the bottom, cutting and removing the roots and caked sediment, putting the sewer system in almost 100% clean condition.

Write for our new catalog on complete sewer cleaning equipment.

EXPANDING SEWER MACHINE COMPANY
108 East Walnut St. Nappanee, Ind.

P.F.T. SUPERNATANT SELECTOR

Provides positive means of selecting and removing best supernatant liquor from digestion tanks at slow, continuous rate, regardless of location of supernatant in tank. Vertical slotted tube of selector extends thru all zones where strata of supernatant form. Effective capacity of tank for reduction of solids is increased. Rate of withdrawal is controlled with P.F.T. Supernatant Gauge, Sight-Glass and Sampler. Bulletin 243.

P.F.T. PACIFIC FLUSH TANK CO.
4241 Ravenswood Ave., Chicago 13
New York • Charlotte, N. C.
San Francisco • Los Angeles
Denver • Jacksonville • Toronto

470 FOURTH AVE.,
NEW YORK 16, N. Y.
Is Information Headquarters

for municipal, waterworks officials, and engineers wanting further details on printed matter from the manufacturers advertising in these pages. Our Reader Service Department will be glad to forward any literature or special requests you mail to us at the above address.

THE AMERICAN CITY

Barton high-pressure fog gun throws short or long range fog.

New High-Pressure Fog Gun

The small-line Barton Super-Fog system working at pressures from 250 to 800 pounds gives fog streams that protect the hoseman, smother and blanket the fire quickly and cut water damage. The gun makes available a variety of streams, from powerful straight streams and short range fog to long range fog.

The fog is created in the gun and does not rely on extreme high velocity working against atmospheric pressures. The gun is operated by one man for it has no "back lash." Every American Fire Apparatus fire truck is equipped with one or more. The gun alone is available through sales representatives and from American Fire Apparatus Co., Battle Creek, Mich.

Slide Rule for Sewer Design

A handy slide rule for solving sewer design problems was illustrated on page 161 of THE AMERICAN CITY for January, 1950. The address given was incorrect. For literature describing the sewer design slide rule and illustrating its practical uses, address Irving Goldfien, 1708 W. Capital Drive, Milwaukee 6, Wis.

Baldwin-Lima-Hamilton Acquires Austin-Western

Marvin W. Smith, president of the Baldwin-Lima-Hamilton Corp., Lima, Ohio, reports that Baldwin's board of directors has approved the substance of a plan to acquire all of the outstanding shares of common stock of the Austin-Western Co., Aurora, Ill.

Austin-Western manufactures hydraulic cranes, road graders, street sweepers, rock crushing equipment, road rollers, and railroad dump cars. McClure Kelley, president of this firm, states that ever since the war the company has been handicapped by inadequate facilities to service the volume of business available to it, and that now with increased demand for construction machinery, his concern has an opportunity of enlarging its facilities.

Mr. Kelley reports that the present management and personnel of Austin-Western will remain the same and that the firm will concentrate on manufacturing road graders and its new hydraulic crane, Hamilton. Other products will be sent to Baldwin-Lima-Hamilton.

New Barton Super-Fog gun

National Supply Buys Atlas Engine Co.

The National Supply Co.'s Engine Division, Springfield, Ohio, has completed a consolidation of its sales and service facilities with those of the Atlas Imperial Diesel Engine Co., according to an announcement made by F. H. Kilberry, engine division general manager.

Mr. Kilberry reports that this consolidation enables the company to offer extensive sales and service facilities on National's Atlas and Superior diesel, gas, dual-fuel, and Chrysler marine gasoline engines.

Various sales branch offices have been established.

Quality Bonds—in Quantity... *for pension fund investment*

HALSEY, STUART & CO. INC. is singularly equipped to meet the investment requirements of pension, insurance and endowment funds.

¶ Through sustained activity as one of the nation's leading underwriters and distributors of bonds for investment, we are prepared to offer high quality corporate and municipal issues in the large amounts desired. Our own sizable inventory, together with active municipal and corporate trading departments in both Chicago and New York, makes available in quantity the selected underwritings of both ourselves and others. Our organization's familiarity with the markets and with the requirements of pension funds also can be of marked service.

¶ Send without obligation for our latest offering list. It indicates a ready bond availability that may prove highly advantageous to your pension program.

❑ ❑ ❑

HALSEY, STUART & CO. INC.

123 SOUTH LA SALLE STREET, CHICAGO 90 • 35 WALL STREET, NEW YORK 5
AND OTHER PRINCIPAL CITIES

4 new bulletins on RCA 2-WAY RADIO STATION EQUIPMENT

... containing detailed descriptions of a complete line of equipment — transmitters, receivers, control consoles, accessories — for that most important part of your two-way radio system, the headquarters station.

... includes eight different transmitter models with powers of 15, 60, 70, 250 and 3000 watts, frequencies of 30-50 mc and 152-174 mc. Choice of cabinets and control consoles, local or remote. Complete electrical and mechanical specifications to help you place a complete installation of the most modern type.

For free copies of these handy references, simply mail the coupon. *(In Canada, write RCA Victor, Limited, Montreal.)*

RCA Engineering Products, Camden, N. J. Dept. O-102
Send me the following books on RCA 2-way Radio equipment:

☐ 3000-watt State Police Equipment (42-45 mc)
☐ A-c Carfone, 15-watt Portable (152-174 mc)
☐ Fleetfone Station Equipment (30-50 mc)
☐ Carfone Station Equipment (152-174 mc)

Name_____
Firm or Organization_____
Address_____
City_____ State_____

RCA RADIO CORPORATION of AMERICA

With Engineering Sales Staff

Ray W. Lindsey has joined the engineering sales staff of Builders-Providence 1, R. I., and the Omega Machine Co., in the Wilmette, Ill. office.

A member of the American Society of Civil Engineers and the American Society of Naval Engineers, Mr. Lindsey will cover the territory out of Chicago and Wilmette for both companies.

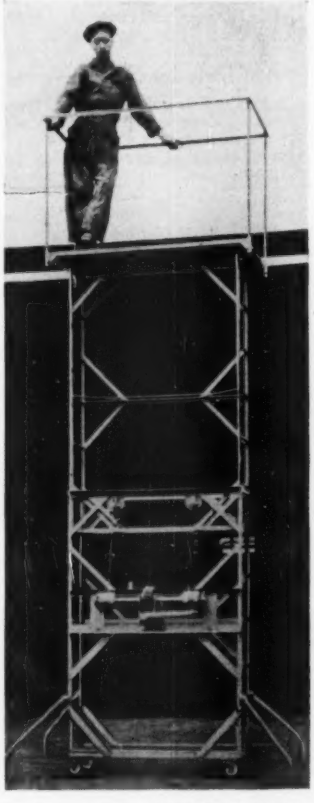
He had been associated with the consulting engineering firm of Hitchcock and Estabrook in Minneapolis, Minn., from August 1946 to November 1950.

New Marquee Servicer

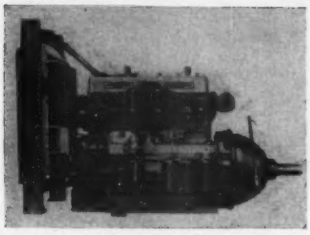
A new and improved marquee servicer for overhead maintenance, painting, lighting, and cleaning is reported by the Atlas Industrial Corp. Of sturdy, all-welded steel construction, it is 6 feet, 8 inches high, and raises to 11 feet and 6 inches. The base is 28 inches by 4 feet and stock platform, 2 by 4 feet.

The raising mechanism is by hand-operated winch with a self-locking worm gear held by steel cables. An outrigger brace prevents tilting or rolling.

Full information is available by writing to the Atlas Industrial Corp., 849 39th St., Brooklyn 32, N. Y.



New Power Diesel For Municipal Plants



This new diesel power unit has a quick-conversion kit with which it can be changed from diesel to natural gas, or from natural gas to diesel.

The Waukesha Motor Co. of Waukesha, Wis., reports that its new diesel power unit, the Mogul Six, is an outstanding engine for municipal water and light plants. It carries a maximum continuous output rating of 201 hp with overload capacity of 272 hp.

The Waukesha diesel line now includes 4-cylinder and six 6-cylinder engines with horsepower range of 20 to 350.

The Mogul Six is a six-cylinder, four-cycle, solid injection full diesel with a 7-inch bore and 8¼-inch stroke and a displacement of 1,905 cubic inches. It has the spherical combustion chamber, characteristic of all Waukesha diesels, and is recommended for use with all modern, high speed diesel fuels of 45 cetane or above.

Its seven-bearing crankshaft has a vibration dampner and hardened journals and crankpins. Among its other features are hardened wet sleeve cylinders; oil-jet piston cooling and aluminum alloy pistons; full-flow series connected oil cooler, and stellite faced valves and seat inserts.

For literature, write directly to the company.

First Aid and Fracture Appliances

New York City's request for bids on 20,000 stretchers or litters calls attention to the growing importance of having on hand quantities of surgical products commonly bought by municipalities only for their first-aid and rescue crews. Ambulatory Splint Co. handles such a line of fracture splints and litters. It is described in literature. The line includes individual first-aid splints, as supplied to Red Cross; as well as litters. Of special significance to civil defense organizations are the litters and an emergency kit of first aid Thomas splints for both arm and leg, with heel rest and ankle and wrist hitches, packed in a canvas carrying case.

The stretchers are of military design and constructed of non-critical materials to meet civilian demands. The tops or covers are fire resistant and mildew proof. Literature is obtainable from Ambulatory Splint Co., 392 Second Ave., New York 10, N. Y.

Prestressed Pipe For Water Lines

Reporting that its prestressed concrete steel-cylinder pipe has a life expectancy of over 100 years, the Price Brothers Co., 1766 E. Monument Ave., Dayton 1, Ohio, points out that there are many other advantages because of combining the strength of steel, the protection of concrete, and the unusual qualities of prestressing.

Among these are its great structural strength, initial and continued high rate of flow, water tightness, economy, and easy to tape and to lay.

The structural concrete core and the steel cylinder are prestressed by a wrapping of high tensile steel wire. The outside is protected by a coat of rich cement mortar, and a special zinc-coated steel and rubber joint provides a flexible watertight connection.

The pipe is available in 16-foot lengths and in diamaters of 16 inches, 20, 24, 30, 36, 42 and 48 inches, and larger.

This pipe is the modern engineer's solution to the need for long-life, high pressure water supply lines.

The company will furnish information on estimated pipe and installation costs without obligation. Write for your copy of the booklet on prestressed pipe.

FIGHTS DIRT—FIGHTS FIRE!

Save Money with Standard Steel Tractor Flushers

Below: This Streamlined Standard Steel Flusher is one of the Finest Truck Mounted available.

PRESSURE POWER MAKES TF TRACTOR FLUSHER A DEPENDABLE AUXILIARY "FIRE-FIGHTER"

STANDARD STEEL TF TRACTOR FLUSHER—not only a thoroughly dependable street flusher but an auxiliary "fire-fighter." Can be hitched quickly to any tractor for daily or emergency use. No need to invest in trucks with the TF FLUSHER. Can be powered by tractor take-off or independent pump motor.

STREAMLINED FLUSHER—gives 50 pounds pressure on each nozzle. It's modern to the minute—easy to operate—highly efficient.

Write for Catalog on Complete Flusher Line

OTHER PRODUCTS

Asphalt Pressure Distributors, Maintenance Distributors, Tar Kettles, Patch Rollers, Supply Tanks, Tool Heaters, Asphalt Tools, Construction Brooms.

Built to the Highest **Standard**

Standard Steel Works NORTH KANSAS CITY, MO.

Continuous Copying

Copies of anything written, printed, drawn, typed or photographed in reduced or enlarged size at the rate f five 18 by 24-inch photocopies a minute are made by a new semi-automatic photocopying machine called the Haloid Foto-Flo. No dark room is required. The operator merely sets the clock for the required number of seconds exposure and presses the trip. An electrical relay makes the exposure while a mechanical counter keeps track of the number of photocopies made.

The machine accepts material such as engineering drawings, layouts, auditors' reports and other municipal documents up to 36 by 48 inches which can be reduced in one exposure to 18 by 24 inches. A 9- by 12-inch copy can be enlarged to 18 by 24 inches in one exposure. In-between sizes are made in ratio. Haloid designed the Foto-Flo to meet the demand for a photo-copying machine that could be used continuously to turn out copies at a much faster rate of speed than ever possible before. The machine is all-metal construction. All parts of the machine in contact with chemicals are made of stainless steel, nickel castings and corrosive-resistant chemicals.

The Foto-Flo is now in production manufactured by The Haloid Co., Rochester 3, N. Y.

How CLEANLINESS is AUTOMATIC with BB WASTE RECEPTACLES

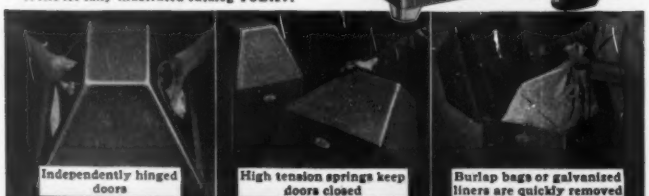
● Everybody is automatically a member of your cleaning department by conveniently placing Bennett Bilt Waste Receptacles to invite their use. These waste receptacles are sanitary, economical and a major help to cleanliness and neatness. *Put them to work for you today.*

ONLY BB WASTE RECEPTACLES HAVE ALL THESE FEATURES

- Non-rusting stainless steel feet eliminate rusting and rust marks
- Made of extra heavy-gauge Mayari R, Bethlehem's corrosion resistant steel
- All-welded construction
- Smooth exterior surface . . . nothing to catch and tear clothes
- Reinforced corners
- Strong springs keep doors closed providing greater sanitation and eliminating fire hazards
- Rounded corners for structural strength and pleasing appearance
- Baked enamel finish . . . white or green

These are a few of the many features that make Bennett Bilt Waste Receptacles a natural "buy." Quality and every consideration for hard usage are self-evident both inside and outside of these receptacles.

Write for fully-illustrated catalog TODAY.


Independently hinged doors
High tension springs keep doors closed
Burlap bags or galvanized liners are quickly removed

THE BENNETT MANUFACTURING CO., ALDEN, N. Y.
CUSTOM METAL CRAFTSMEN SINCE 1906

Office on Wheels

Office-on-wheels developed by the Burroughs Adding Machine Co., Detroit 32, Mich., brings business machines to the customer's door. Photographed also is a prospective customer trying out a sensimatic accounting machine. The vehicle is a Dodge Route Van truck with 462 cubic feet of "office" space.

Engineered Wood Proves Ideal Building Material

Wood is one of the most durable and economical of all building materials.

During the present national emergency, the shortage of steel creates a problem for those in the building field. However, wood has proved a capable and attractive alternate, and is in considerable demand.

Engineered wood, produced by Timber Structures, Inc., P. O. Box 3782, Portland 8, Oregon, is versatile, economical, permanent, beautiful, and can be used for plants for industry as well as for houses of worship.

The firm designs and fabricates its engineered wood from Douglas fir, one of the strongest of all firs. This wood is straight grained, tough, resilient, and exceptionally durable. The material is kiln dried, precision milled, and welded together under pressure with adhesives which provide an everlasting bond as strong as the wood itself. It is employed for permanent timber bridges, complete deck bridges, modern school buildings, portable bleachers, and packaged buildings.

Timber Structures has prepared several descriptive pamphlets which will be sent on request. These booklets discuss in detail the varied uses of engineered wood. Bridges constructed of this material provide long service life and low construction cost. Timbers are permanently free of dimensional changes and seasoning effects.

W. F. Jordan

Lee Morgan

K. F. Ames

E. A. Tiarks

Caterpillar Expands Sales Division

Because the increase in sales volume due to the national emergency is three times the pre-war level, the Caterpillar Tractor Co., Peoria 8, Ill., has created an additional sales division, reports, Gail E. Spain, vice-president.

The new unit will be known as the plains division, covering territory formerly under the central division which will take over part of the eastern division. The western division is the fourth administrative sales unit.

To staff the new organization, the following promotions have been announced: Kenneth F. Ames, sales manager of the plains division, and Lee Morgan and Gordon Fowler, assistant sales managers.

E. A. Tiarks is assistant sales manager of the western division, and W. F. Jordan, assistant sales manager of the eastern group.

The engine sales department, managed by H. W. Smith, will operate as the industrial division of the general sales department under the general administration of H. H. Howard, director of sales.

Functions of the sales training division have been transferred to the sales development unit, headed by C. E. Jones.

Acquires New Company, Names European Manager

E. J. Schwanhausser, executive vice-president of the Worthington Pump and Machinery Corp., Harrison, N. J., reports that the firm has acquired the land, buildings, and equipment of the National Transit Pump and Machine Co. in Oil City, Pa. The plant covers 500,000 square feet. It will be utilized by the corporation in furtherance of its production of equipment related to the National Defense Program.

Also announced is the reorganization of the construction equipment sales divisions, whereby the Holyoke, Mass., and Dunellen, N. Y., divisions are grouped together with headquarters at the Dunellen, N. J., plant. W. J. Fleming, former Holyoke construction equipment sales division manager, has been named works sales manager of the consolidated division, and J. S. Bachman, field sales manager.

Hooper Equipment, Inc., at 1256 S. State St., Syracuse, N. Y., has signed a distributorship agreement to handle Worthington construction equipment.

W. A. Finn has been named general European manager of Worthington, and now is in Paris, according to an announcement by S. R. Williams, vice-president in charge of foreign business. He replaces A. W. Fraser, who is assuming an executive sales position with Worthington, making his headquarters in Chicago.

From 1930 to 1941, Mr. Finn was New England district sales manager for the company and later manager of the export department.

R. G. Milton Dies

R. G. Milton, assistant advertising manager of the Austin-Western Co., Aurora, Ill., died Feb. 8, of complications which resulted from a major operation he had had last fall.

Boston Tried One . . .
BOUGHT 13 MORE BAUGHMAN SPREADERS

Here are 10 of the 14 Baughman Sand Spreaders recently purchased by the City of Boston after thorough tests of several similar makes.
CITY OF BOSTON

Officials of the Dept. of Public Works of the City of Boston have been delighted with the performance of their 14 Baughman Sand Spreaders . . . For the same reasons that all owners of Baughman Spreaders are pleased:

1. An unbelievably low price for a machine of this type.
2. Constructed of High Tensile Alloy Steel —30% lighter, 17% stronger, abrasive resistant and 5 times more rust-resistant than ordinary steel.
3. Absolute Spread Control by Safety Baffle Plates. Adjustable to cover width from 8 to 30 feet.
4. Patented Pre-heaters in the bottom of these bodies keep material flowing freely and prevent breakage of moving parts in extremely cold weather.
5. Push button control from cab of truck allows spot spreading wherever desired if driven by auxiliary engine. Oil sealed clutch gives finger tip control for spot spreading if power take off drive is desired. Either drive furnished at customer's option.

At right is George Hyland, Commissioner of Public Works in Boston. With him is J. Leo McGrath, Division Engineer, Automotive Division, Dept. of Public Works, Boston. Both of these officials expressed complete satisfaction with their 14 Baughman Spreaders.

This fleet of Baughman Spreader Bodies was sold by . . .

SANDBERG EQUIPMENT COMPANY
76 Landsdowne St. **Cambridge, Mass.**

BAUGHMAN

BAUGHMAN MANUFACTURING CO., Inc.
631 Shipman Road Jerseyville, Ill.
"There is a Baughman Distributor Near You"

A complete power plant, built to be moved wherever needed.

HERE IS THE MACHINE THAT HAS REVOLUTIONIZED CONCRETE SAWING

NEW *Self-Propelled* CONCUT CONCRETE SAW

CONCUT

THE GREATEST NAME IN CONCRETE SAWS

Today, concrete sawing is *big business!* . . . and the Self-Propelled CONCUT is the machine to handle this business *faster, easier* and *cheaper.*
The Self-Propelled CONCUT brings a new high in efficiency for all of your concrete and asphalt sawing jobs. The Self-Propelled feature, the Finger-Tip control, the exclusive Lever Lock are some of the engineering features, which mean substantially lower blade costs . . . virtual elimination of operator fatigue and fewer manhours on the job.

● *More and more cities are specifying "sawing before breaking." Contractors and engineers are becoming increasingly aware of the advantages and long-range economy of "sawing before breaking," wherever concrete or asphalt is removed. • NOW is the time to get full details on the Self-Propelled CONCUT . . . Write for Bulletin 12 today!*

CHECK THESE BIG CONCUT FEATURES

SELF-PROPELLING . . . virtually operates itself, gives you anti-fatigue sawing, longer blade life and fewer manhours on the job.

FINGER-TIP CONTROL . . . Spindle speed tachometer, water pressure gauge, transmission control lever, motor shut-off and motor throttle located on dash panel directly in front of operator.

LEVER LOCK . . . enables operator to remove blade from cut, then lower to same cutting depth without changing adjusting screw.

CONCRETE SAWING EQUIPMENT, INC.
15 North Oakland Avenue, Pasadena 1, California

Portable Power Plants For Civil Defense

Every civil defense plan—and practically all cities are making them—anticipates the destruction of electric light and power facilities. An important factor, therefore, may be the 1,600-hp portable power plants developed first by the U. S. Army, and further by A. G. Schoonmaker, Inc., 50 Church St., New York, N. Y. These plants, if available, can be rushed on freight cars to any stricken area.

The prime mover of the plant is a GMC diesel engine rated 1,600 bhp, direct-connected to an Electric Machinery Mfg. Co. generator, mounted on a common steel sub-base.

The fuel is carried in a skid-mounted 1,000 gallon tank. The starting air assembly consists of two skid-mounted air tanks and Quincy compressor. The muffler assembly has a Maxim dry-type industrial silencer mounted on a skid. The switchgear is of Westinghouse Electric Corp. make.

Everything for Street Lighting

Street-lighting equipment consists strictly of standards, brackets, control equipment and—the luminaires. All are supplied by the Street Lighting Division of Line Material Co., Milwaukee 1, Wis. The one thing street lighting is nothing without is luminaires. Line Material makes four major types of luminaires, all ending with "lite."

For the smaller communities, residential areas and outlying sections there is the stainless-steel Directrolite for 1,000 to 2,500 lumen series or multiple lamps. The Controlite is for full scale traffic-safety and whiteway lighting. Spherolite and Spherolite Jr. were designed primarily to provide a luminaire of high efficiency. For a practical understanding of the luminaires, brackets and mast arms, etc., write for Bulletin SA-1.

Chain Saw Efficiency Goal of Firm's Fight-Waste Program

The chain-saw, perhaps the greatest saver of man-hours in the lumber industry, is being enlisted in the nation's program to arm itself against aggression.

Henry Disston & Sons, Inc., of Philadelphia, the nation's oldest sawmaker, is conducting a "Fight-Waste" drive throughout the country and industry, in order to keep every chain saw at top-working efficiency.

With wood products in increased demand for defense, such as tars, resins, chemicals, paper and building lumber, the program stresses the importance of tools in enabling the country to hold its productive supremacy.

The Disston campaign calls for every effective means of forestalling tool breakdown and misuse through a sound, down-to-earth system of preventive maintenance, implemented by the national organization of Disston service dealers.

Wind Tower Saves Oranges And Air-Polluting Smudges

A number of municipalities in the citrus-fruit areas could doubtless tell tales of air pollution due to smudge-pot battles against frost. The threat of air-pollution committees may considerably subside due to use of a new and automatic engine driven wind tower. The idea of the tower is to blow the warmer upper air down to ground level.

Then a group of men developed an automatic wind tower, taking the costly manual factor out of the method. Installed on a 20-acre fruit ranch at Glenora, Calif., this one tower has reduced the usual 45 smudge pots per acre to 12 needed only in severe weather.

This steel tower is 50 feet high, mounting a 100-hp internal combustion engine driving a 13-foot propeller, moving 320,000 cfm, and slightly inclined to drive the warmer air at this height to the ground level. The supporting platform on top of the tower is geared to make one revolution every four minutes. It is controlled by a Synchro-Start control system which automatically starts the engine when the ground temperature reaches 30°F and stops the engine when the temperature is raised to 34°F at which temperature the fruit is safe from frost as 28°F is freezing point.

RICHARD T. PUELICHER,
Synchro-Star Products, Inc.
1046 W. Fullerton Street
Chicago, Illinois.

Public Relations Consultant

Harold S. Rand has joined the Meter-Ad Corp. of America, 6 State St., Rochester 4, N. Y., as industrial public relations consultant, to assist in its national sales promotion program of parking-meter advertising to municipalities.

Mr. Rand is former director of public relations for the City of Rochester, and a past president of the Association of Municipal Public Relations Officers.

OREN
FIRE APPARATUS

ONE OF 4
1000 G.P.M.
OREN
MODEL 1600/1000
PUMPERS
SERVING ROANOKE
VIRGINIA
. . . (You Can't Fool Your Own Hometown!)

OREN ROANOKE CORP.
ROANOKE 16, VIRGINIA

WATER RATES

from selected cities across the country, with data on the type of water system each supports.

Plus —
SEWER SERVICE CHARGES
now in successful use supporting well-operated sewage works giving examples of charges based on
plumbing fixtures
water use
strength of industrial waste

Plus —
WRITTEN DISCUSSION ON
what types of water rates are in use and how to select the one your community needs

- How to set a minimum water rate that means something
- What to charge out-of-city customers
- What hydrant rental really means and how to calculate it fairly
- How to frame a sewer service charge that works

— 64 pages — price $2.00

MAIL THIS COUPON FOR YOUR COPY to
The American City, 470 Fourth Avenue, New York 16

Yes, please send me by return mail ..... copies of your WATER RATES AND SEWER SERVICE CHARGES at $2 per copy.

☐ I am sending a check with this order
☐ Please bill me for my copies when they are sent

Signed .....
Title .....
Address .....
City ..... State

This chlorine dispenser utilizes a dry-vacuum, solution-feed principle which eliminates contact of chlorine with moisture previous to the point of solution.

Swimming Pool Chlorine Dispenser

Fischer and Porter Co., 3790 County Line Road, Hatboro, Pa., reports that its new Ratochlor chlorine dispenser has been developed especially for swimming pool installations and engineered to provide low cost, safe, and dependable chlorination. This dispenser is a modification of the firm's industrial Ratochlor chlorinator. It utilizes a dry-vacuum, solution-feed principle which eliminates contact of chlorine with moisture previous to the point of solution.

The Ratochlor chlorine dispenser is built around the use of accurate dependable Flowrator chlorine meter. All the chlorine gas flowing into the pool passes through the glass tube of this meter where it may be observed as it is measured. A special regulator is designed into the system which automatically shuts off the chlorine should the vacuum be lost—even momentarily. It opens automatically when vacuum is restored. Catalog SP-61 illustrates and describes this new dispenser.

1,000th Trolley Coach

After four years in the transit equipment business, the Marmon-Herrington Co., Indianapolis, Ind., completed and delivered its 1,000th trolley coach.

Trolley Coach No. 1,000 is part of an order now in process, for the Cincinnati Street Railway Co. In Indianapolis to commemorate the occasion and accept delivery on February 1 were three officials of the Cincinnati firm: Morris Edwards, president; Herman F. Tornau, general manager, and Pierre V. C. See, superintendent of equipment. On hand to deliver the coach for Marmon-Herrington were Colonel A. W. Herrington, chairman of the board, and David M. Klausmeyer, president.

Marmon-Herrington entered the transit equipment industry in 1946 with a trolley coach of revolutionary design. It was constructed of aluminum and steel alloys, and featured patented double side wall body construction. In 1947, the company introduced the world's first trolley coach of 48-passenger capacity, and in 1950, those of 50-passenger capacity.

Other "firsts" of the company were interchangeability of parts in all models, double-stream exit doors, lower steps, wider aisles, higher ceilings, roomier, more comfortable seats, and better vision for operators and passengers.

The firm also manufactures such military vehicles as gun tractors and cargo carriers, armored and scout cars, fire and crash trucks, ambulances, balloon winch trucks, machine shop and wrecker trucks, light and medium tanks, and amphibious and airborne tanks.

Mineralead Representative

George L. Wirtz, president of The Atlas Mineral Products Co., of Mertztown, Pa., and Houston 1, Texas, has announced that B. H. Brock has been appointed representative for Mineralead in central and western Pennsylvania and central and western New York State.

Mr. Wirtz reported that this appointment is in accord with the increased emphasis on Atlas service to water works engineers

SPARLING MAIN-LINE METERS

for Your

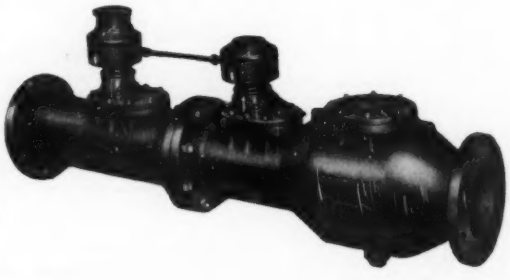
MASTER RECORDS

Every man responsible for water service knows the hazard of ***guessing***. It is not enough to know the ***rated*** capacity of a pump. What is it doing right now?

The instrument at right tells all—direct totalization — present rate of flow — a complete picture of each 24 hours' or 7 days' deliveries. It can be installed close to, or miles away from, the Sparling Direct Action Meter that controls it.

and Practically NO Pressure Loss!

Sparling Meters are noted for their conservation of line pressure. Even the Compound Meters—shown below, with flow ranges as high as 1 to 125—show less head loss than ordinary meters. That is part of Sparling economy.



Bulletin 311 comes upon request

SPARLING METER COMPANY
INCORPORATED

LOS ANGELES 54	Box 3277	626 Broadway	CINCINNATI 2
CHICAGO 8	1500 South Western Ave.	101 Park Avenue	NEW YORK 17
BOSTON 8	6 Beacon Street	1932 First Avenue	SEATTLE 1
DALLAS 1	726 Reserve Loan Life Bldg.	66 Luckie Street N.W.	ATLANTA 3

Not many municipal park departments will have personnel as attractive as this. However, the manufacturer points out that the ease with which she can handle this rotary mower should assure equal ease and efficiency by any park department employee. The mower is made by the Yazoo Mfg. Co., Jackson, Miss.

Two Firms Join to Aid Western Defense Efforts

The Mack Mfg. Corp. of the Empire State Bldg., New York, N. Y., and the Wooldridge Mfg. Co., Sunnyvale, Calif., have joined to aid western defense efforts. Under the agreement, Wooldridge will partially produce and fully assemble Mack off-highway vehicles in its main Sunnyvale plant. The vehicles, which operate off the public highways, will be specially designed to fit the needs of western contractors, miners, and loggers.

Wooldridge also will act as exclusive distributor for Mack's off-highway equipment in ten western states.

In a joint statement, H. W. Dodge, executive vice-president of Mack Trucks, Inc., and H. Gusman, president of Wooldridge, declared that they believe this agreement will "enable western contractors, miners, and loggers to increase production and lower costs as a result of products assembled for them in the West."

"We hope more mines can be opened, and more construction jobs and more pioneering of forests undertaken."

The two firms, which manufacture heavy rubber-tired equipment, feel that this addition to heavy industry in the West will be a great contribution to the mobilization efforts of the western states.

Versatile Mower Fast, Easy to Handle

Quick, economical, efficient, and actually pleasant mowing are among the advantages claimed for the Yazoo Master Mower, a big, rugged, long-lived mower that comes in four models to suit every mowing purpose and purse.

The Master Mower not only takes grades up to 45 degrees without struggle or strain, but crops close, handles easily, and can deal with tough weeds as easily as with tender grass. A powerful four-cycle gasoline engine, heavy-gauge steel housing, seamless steel tubing chassis frame, and durable spring-steel blade are additional features of the machine, a product of the Yazoo Mfg. Co., Jackson, Miss. A fully adjustable governor guarantees accurate, dependable speed control, and insures safety in operation.

Moves to Pasadena

Van H. Wilkinson, president of Wilkinson Products Co., announces the removal of the firm's office from P. O. Box 1774 Wilshire-La Brea Station, Los Angeles 36, Calif., to 3987 Chevy Chase Drive, Pasadena 3, Calif. The eastern branch office is located at 6550 N. Smedley St., Philadelphia 26, Pa.

The company manufactures lightweight, compact, sturdy, all-purpose Wilkinson line locators.

HELLIGE TURBIDIMETER

A TURBIDIMETER WITHOUT STANDARDS

Accurate • Foolproof • Universal

For MEASUREMENT OF TURBIDITY (SiO_2) DETERMINATION OF SULFATE (SO_4) AND OTHER APPLICATIONS

WRITE FOR CATALOG No. 8000-A

HELLIGE INCORPORATED

3718 NORTHERN BLVD. LONG ISLAND CITY 1, N.Y.

GLOWS IN THE DARK!

New Phosphorescent Tape

Absorbs light from any source and releases it in darkness.

Makes glowing safety guides for hundreds of Civil Defense needs. Use anywhere . . . indoors or out.

Write for FREE SAMPLE, price list and suggested uses for blackouts, air raids or power failures.

FREE Brochure explains FLUORESCENCE, its many uses.

WRITE TODAY

LAWTER CHEMICALS, INC.

3559 Touhy Avenue, Chicago, Illinois

Bucyrus-Erie Distributor

The Bucyrus-Erie Co. of South Milwaukee, Wis., has appointed the Southwest Machinery Co., Oklahoma City, Okla., as distributor for general purpose excavators and Hydrocranes.

Southwest Machinery's main office is at 1900 Linwood Boulevard, Oklahoma City, and it has branch offices in Tulsa, Hobart, and Guymon.

It will handle sales and service of the Bucyrus-Erie line of ⅜ to 4-cubic yard shovels, dragshovels, draglines and cranes, gasoline, diesel, or single-motor electric powered, as well as sales and service of the all-hydraulic 2-ton and 3-ton Hydrocranes throughout Oklahoma.

Schield Bantam ⅜ cubic yard dragline owned by Greenville, Miss., handles excavation for new sewer lines at local housing project.

For ECONOMICAL, LONG-LASTING PROTECTION of Equipment and Property

You'll find Pitt Chem Cold Applied Tar Base Coatings ideal for a wide variety of protective jobs. Made from coal tar pitch, one of nature's most impervious protective materials, they're easy to apply, relatively low in cost, and effective against most corrosion conditions.

The uniform top quality of Pitt Chem Cold Applied Tar Base Coatings is assured by the close production control which results from our completely integrated manufacturing operation. If you're looking for an economical, dependable way to add years of service to your plant's physical assets, see your nearest Pitt Chem man . . . or write for new booklet, "Control Corrosion through Pitt Chem Protective Coatings".

PITT CHEM
Industry's Most Comprehensive Family of Protective Coatings

- ★ Hot Applied Tar Base Coatings
- ★ Cold Applied Tar Base Coatings Series 100
- ★ Alkyd Base Coatings—Series 200
- ★ Chlorinated Rubber Base Coatings—Series 300
- ★ Vinyl Base Coatings—Series 400
- ★ Phenolic Base Coatings—Series 500

See Your Nearest Pitt Chem Man

PROTECTIVE COATINGS DIVISION

W&D 3480

PITTSBURGH COKE & CHEMICAL CO.
GRANT BUILDING, PITTSBURGH 19, PA.

OFFICES: New York • Chicago • St. Louis • Tulsa • Houston • Los Angeles • San Francisco

Greenville Employs Mobile Excavator

City Engineer John Teunisson, Jr. of Greenville, Miss., reports substantial savings with their high-speed Schield Bantam ⅜-yard excavator, especially on job-to-job moves where the machine is only needed on three to four hour projects.

The city has owned the machine for over 13 months, and despite constant hard use, expenses for repairs have amounted to less than $100.

The half-track mounted rig, equipped with a 30-foot boom and 25-inch dragline bucket, is photographed digging 12-foot deep trenches in tough clay and earth materials for sewer installations at a local housing site.

When not busy with digging assignments, Greenville uses its Bantam for handling stockpiled crushed stone and gravel, loading and unloading railroad cars, and trucks. Mr. Teunisson says actual job records show that a carload of fine slag was unloaded in one hour and 45 minutes.

Manufacturer of the machine is Schield Bantam Co., Inc., 234 Park St., Waverly, Iowa.

U. S. Pipe and Foundry Acquires Pontusco Corp.

The United States Pipe and Foundry Co. of Burlington, N. J., announces that it has acquired complete ownership of the Pontusco Corp., which formerly had been jointly owned by the U. S. Pipe and Foundry Co. and Compagnie de Pont-a-Mousson of Nancy, France. Through an agreement made between the two companies, all of the Pontusco stock which had been owned by the French company was purchased by the U. S. Pipe and Foundry Co. Pontusco is owner of all the common stock of the United Concrete Pipe Corp. of California, which is a supplier of concrete pipe in California and other western states.

Through the agreement, Compagnie de Pont-a-Mousson acquires complete ownership of Pontusco Corp. of Cuba, which operates a plant producing concrete pipe at El Cotorro, Havana, Cuba.

Retires as Vice-President

Robert C. Ross has retired from active service with Joseph T. Ryerson and Son, Inc., Chicago 80, Ill., after 47 years with the steel warehousing concern. He had been vice-president in charge of operations for many years, and for the past two years was an advisor for the Ryerson construction program.

R. C. Ross

During World I, Mr. Ross was chairman of the Industry Cooperative Committee with Railways of the Middle West, and for several years was vice-president of the Chicago Association of Commerce.

Pumps of Every Type

Besides manufacturing diesel engines, diesel locomotives, and electrical machinery, Fairbanks, Morse and Co., produces pumps of every type. These include angle flow pumps, rotary, sewage, horizontal, side-suction, steam and deep well pumps. Most are of standard design, but some are the new bladeless impeller pump.

Recently, the firm shipped a 36-inch close-coupled, angle-flow, centrifugal pump to San Francisco, Calif., which placed it in its North Point sewage treatment plant. Constructed as a unit with a 225-hp vertical solid shaft synchronous motor, the pump has a motor speed of 300 rpm and will handle 34,700 gallons of water per minute.

For testing at the factory, the pump was set up under actual working conditions. Instruments were used to record its performance.

FOR SALE

Gar Wood Load Packer

Like new 15 cu. yd. on F-7 Ford chassis.

Write to

City of Montebello

City Hall

Montebello, California

Lick the High Cost of Maintenance With Revere

ELECTRIC MFG. CO. CHICAGO, U.S.A.

HINGED LIGHTING STANDARDS

Lamps and Reflectors cleaned and Serviced from the ground

A great boon to safety and efficiency . . . makes a beautiful installation. Available in three heights to suit locality, with and without sub-base transformers.

NO NEED OF EXPENSIVE ELEVATOR EQUIPMENT

STANDARD IN LOWERED POSITION
Chain is removed when standard is raised. Retaining nut is secured by padlock.

OTHER NEW Revere CREATIONS

We Furnish Everything
LUMINAIRES
STANDARDS
REGULATORS
TRANSFORMERS and CONTROLS
Write us today for complete data.

WHITEWAY PYLON-LITES
for business districts, boulevards and residential areas.

SINGLE AND DOUBLE ARM ONE-PIECE STEEL STANDARDS

REVERE ELECTRIC MFG. CO.

6015 BROADWAY — *Indoor and Outdoor Lighting Equipment for Every Need* — CHICAGO 40, ILL.

KILL INSECT PESTS with

IRON AGE

MIST SPRAYERS

Users everywhere praise the performance of Farquhar Iron Age Mist Sprayers on golf courses, parks, playgrounds, swimming pools, tourist courts, picnic grounds, and other places where insect pests are a problem.

Here are the outstanding features of the Farquhar Iron Age Model 125: 22 hp, 4 cylinder Wisconsin engine drives sturdy cast aluminum axial flow fan at 87% efficiency, delivering 6,000 to 11,000 cubic feet of air per minute at 90 to 125 mph. New, efficient spray jets meter *exactly* the right amount of mix, either oil or water, to center of high velocity air stream, insuring complete misting of concentrate. Spray jets can be changed quickly to alter droplet size. Turret rotates 360° for full control of air blast. 125 gallon tanks are available with trailer or skid mounting. Comfortable spring seat for operator.

Find out *now* how Farquhar Iron Age Mist Sprayers can make your pest control program *far more effective at less cost.*
Write A. B. FARQUHAR COMPANY, 3536 Duke St., York, Penna.

Farquhar

IRON AGE

YORK, PA.

POTATO AND VEGETABLE PLANTERS · TRANSPLANTERS
SPRAYERS · DUSTERS · POTATO DIGGERS · WEEDERS
MANURE SPREADERS · CONVEYORS · JUICE PRESSES

PLANT AND SPRAY THE IRON AGE WAY

Represents Water-Works Sales

Hanford Z. Hight, sales manager of the Dresser Mfg. Div. of Dresser Industries, Inc., Bradford, Pa., reports the appointment of Donald V. Hackett as water-works sales representative for Pennsylvania and western New York. Mr. Hackett will specialize in water-works pipe joining and maintenance problems, covering all water departments in his territory.

Waterous Discharge Gate Valve for Fire Apparatus

A new quick-opening ball-type discharge gate valve for fire apparatus is offered by the Waterous Co. of 80 Fillmore Ave., E., St. Paul, Minn. The new design is the result of several years of research and testing.

Because of the unique type of valve seat employed, the valve is easiy to operate, even at pressures of 500 pounds per square inch. The seat is synthetic, oil-resistant rubber, and the pressure of the water is utilized to keep the seat tight against the valve ball. The rubber-like seat lessens the danger of sand or grit destroying the seal.

Drain ports are provided to permit draining of the hose lines when the valve is closed.

Constructed of corrosion resistant metals, the Waterous valve is furnished with 2½-inch National Standard hose thread, or special threading to order.

Garden Park Swimming Pool, Milwaukee, Wisconsin, painted with Phelan's Hydroflex.

Paint Your Pool with Rubber!

Phelan's HYDROFLEX Rubber-Base Finish Gives Beauty and Low-Cost Upkeep

Elasticity and durability are built into this special rubber-base finish. It stands up and keeps its beautiful color under tropical sun or winter frost. Easy to clean because slimy algae can't cling to its satiny tile surface.

Pool owners from coast to coast get two season's wear from Phelan's Hydroflex—investigate now!

FREE! Folder showing COLOR SAMPLES and full information. Write

PHELAN-FAUST PAINT MFG. COMPANY
St. Louis 11, Mo. Since 1902

Phelan's HYDROFLEX RUBBER BASE Swimming Pool Finish

LOOKING FOR WIRE AND CABLE?

Highest Quality

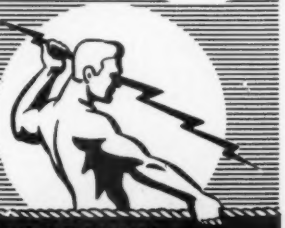
FIRE ALARM
TRAFFIC CONTROL
and
STREET LIGHTING
CABLE

IMMEDIATE DELIVERY

Priced substantially BELOW MARKET

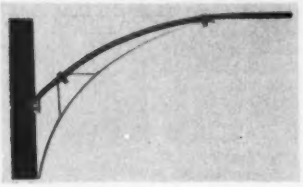
Huge purchases from government stocks enable us to offer unusually low prices to municipalities. This high quality cable is available for immediate delivery from world's largest stock.

May we quote on your requirements?



COLEMAN
CABLE AND WIRE CORP.
4515 W. Addison Street
CHICAGO 41, ILLINOIS

New Line of Pipe Brackets and Mast Arms



A new line of both aluminum and galvanized-steel pipe brackets and mast arms for mounting street-lighting fixtures is announced by the General Electric Co., Lighting and Rectifier Divisions, Schenectady 5, N. Y. Installation is made easy by a keyhole slot in the pole plate which enables a lineman to hang the assembly on a bolt driven through the pole while tightening other bolts. A large radius of bend is allowed for bringing cable through the bracket to facilitate wiring and to guard the insulation.

General Electric announces the appointment of J. T. Farrell as assistant to the manager of sales in the small and medium motor divisions. He will supervise the marketing and promotion division and a newly created gear-motor and packaged drive sales division.

Howard W. Bennett was named manager of the gear-motor and packaged drive sales division, and Paul D. Ross, manager of the Erie (Pa.) d. c. armored motor sales division.

Simple and Efficient Flexible Pipe Joints

Two models of flexible rubber pipe joints for use in sewers, siphons, irrigation pipe and other pipes and culverts are offered by the Hamilton Kent Mfg. Co.

Type "A" gaskets, an excellent coupling medium for concrete pipe, can be used for head pressures up to 50 feet, are usually placed on the pipe at the job site. Type "B" gaskets, for head pressures up to 75 feet, are cast into bell or socket at the pipe plant and quickly coupled at the site.

Among their desirable features, the Tylox coupling joints list permanency, efficient prevention of infiltration, and simplicity of design which makes for low cost per laid foot. Illustrated folders are available from the Hamilton Kent Mfg. Co.

Smoothing Iron For Road Maintenance

"Surfa-slick," a self-contained asphalt smoothing iron, is made by the J. E. Woods Mfg. Co., and is being used by a number of municipalities and paving contractors. This tool carries its own heating device and fuel supply.

Surfa-slick is designed and engineered to provide constant regulatted heat all day for all hand-smoothing and sealing of asphalt surfaces. The machine replaces two old-style irons; it has sharp edges for cutting asphalt joints; a knurled handle for angle leverage, and a specially designed alloy steel handle for proper grip.

Of 40 pounds in weight, it costs $59.50 f.o.b. San Fernando, Calif.

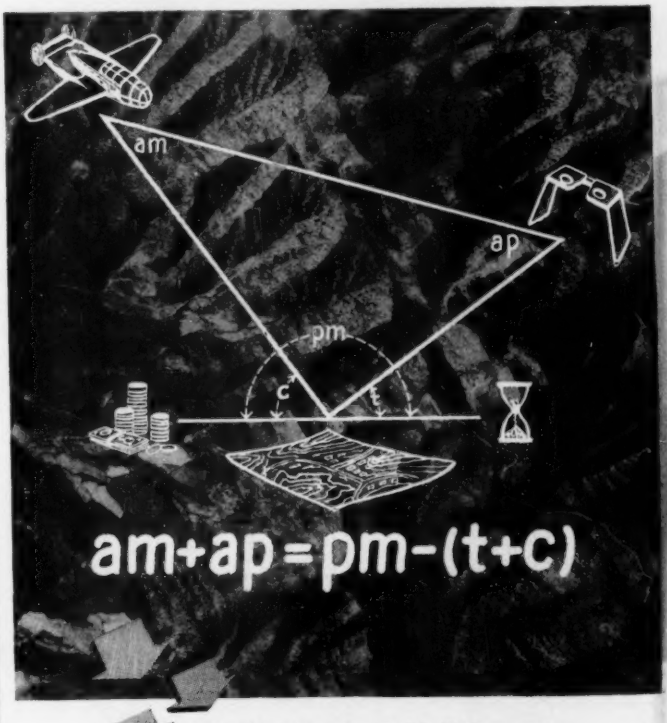
J. E. Woods Mfg. Co., 1516 First St,, San Fernando, Calif., upon request, will send a representative to demonstrate this tool.

Portable Civilian Defense Light

A new portable light for Civilian Defense emergencies which provides 80 hours of continuous light on each battery charge has been announced by the Carpenter Mfg. Co., Somerville, Mass. Designed for use in emergencies by police, fire, first aid, rescue, and demolition squads, this light, known as Type CDU, is powered by a heavy-duty rechargeable long-life battery.

A special Carpenter 2-filament bulb furnishes work or rescue light for 80 continuous hours on one filament, or a higher power floodlight for 20 consecutive hours on the second filament. The light, which has a shatterproof lens, has a thumb-operated 3-way toggle switch controlling both filaments.

The manufacturer will furnish details.



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ABRAMS AERIAL SURVEY CORPORATION
LANSING 1, MICHIGAN U.S.A.

SCOOPS · LOADS · DIGS · DOZES . .

Here's a fast-moving piece of equipment which will play a major part in keeping your city clean all year around. In the winter it scoops snow and ice, scatters sand on slick streets. In the spring you'll find the Skyline Loader scooping dirt and leaves from gutter, moving trash, loading sand and gravel for resurfacing roads, even handling garbage. You'll find your new Skyline "90" Loader the best investment your city ever made.

FOR FURTHER INFORMATION WRITE DIRECT

SKYLINE PRODUCTS

The SKYLINE CORPORATION
1521 McLEAN BLVD., WICHITA, KANSAS

BRAXMAR BADGES

Standard Badges Since 1879

Write for circular illustrating badges for Police, Fire and other City, County and State Officials

John O. Veit, Pres.

C. G. Braxmar Co., Inc.
216 E. 45th St., New York 17, N. Y.

PREMAX

House Numbers

If your city plans to install a modern numbering system, by all means get the special report showing the modern manner of numbering. Insures easy access to any part of town—eliminates duplication and error.

Then, too, see the new Premax Deluxe and Hycaste Numbers in weatherproof aluminum and brass. Send for the Bulletin and sample number.

PREMAX PRODUCTS
DIVISION CHISHOLM-RYDER CO., INC.
5146 Highland Ave., Niagara Falls, N. Y.

District Representative

Marshall O. Nystrom is the new district representative for The Frank G. Hough Co., 710 Sunnyside Ave., Libertyville, Ill. He will work with distributors in California, Nevada, Utah, and Arizona, comprising Hough Payloader sales district No. 7. Recently, Mr. Nystrom and G. E. Killebrew, sales manager, completed a tour of this area where Hough Payloader tractor shovels are being used.

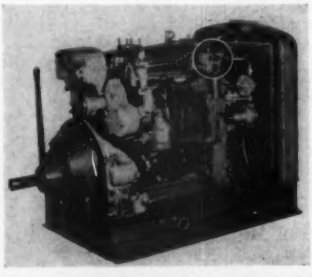
M. O. Nystrom

A member of the firm's sales training program, Mr. Nystrom started with the company in May, 1950, in Libertyville, and has been associated with the sales department.

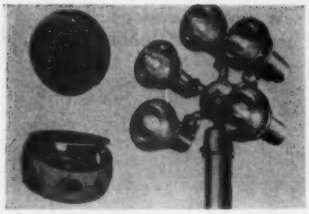
Dual-Fuel GM Diesels

A small lever properly fitted to the Series 71 diesel engines made by Detroit Diesel Engine Division of General Motors enables them to burn natural gas in accordance with true diesel high-compression principles. This feature is available both on new engines leaving the factory and engines already in use.

The dual-fuel unit has no electrical ignition system. Natural gas is delivered to the cylinder and fired by a small charge of diesel fuel at the top of the compression stroke. The engine instantly adjusts itself between the use of natural gas (with a pilot charge of diesel fuel) and straight diesel fuel in case the gas pressure falls off partially or completely. Advantages of the dual-fuel engine are added fuel economy in areas of abundant natural gas, instant changeover, and lowered upkeep due to non-sludging properties of natural gas as a fuel. A booklet describing the engine is available on request to the Detroit Diesel Engine Division, 13400 West Outer Drive, Detroit 28, Mich.



The General Motors Series 71 dual-fuel diesel engine which has just been announced by the Detroit Diesel Engine Division. The lever on gas governor assembly which effects instant changeover from dual-fuel only, to straight diesel or partial dual-fuel operation is circled at the upper right.



Protective Lights That Resist Sabotage

Weatherproof cluster lights for outdoor protective lighting of yards, boundary fences, and other area floodlighting applications are provided with the Stonco Cluster Box No. 25 announced by Stone Mfg. Co., Elizabeth 4, N. J. With cluster lights for plant protective and anti-sabotage lighting, burnout of a single floodlight cannot result in total darkness. Every light in a cluster would have to burn out before darkness would be possible. A removable cast aluminum cover plate sealed with a heavy cork gasket provides quick, easy access to inside wiring and speeds up installation and the addition of supplementary lampholders as well.

New Aggregate Spreader For Asphalt Maintenance

New on the market is the Flink "Even-Seal" spreader, a self-contained hopper-on-wheels unit for all seal and cover coat spreading.

This aggregate spreader for asphalt maintenance is adaptable to all dump trucks.

According to the manufacturer, the Flink Co., Dept. 5-1, Streator, Ill., the unusual design of this unit features the following advantages: uniform, faster spreading either backward or forward; forward speeds up to 20 miles per hour, and efficient operation on steep grades and level terrain.

The width of spread is from 2½ feet to 11 feet and 3 inches and balancing dollies prevent the spreader from upsetting. The volume control gate operates across full width by one lever, or divides in two half sections, each gate, lever controlled.

The material flows all of the way across the hopper without shoveling, and spill-over is impossible. The spreader handles wet sand and all free-flowing materials.

New Refuse Loader

A new and improved Pax-all Model in capacities of 9 and 12 cubic yards is offered by St. Paul Hydraulic Hoist, 2207 University Ave., S.E., Minneapolis 14, Minn. Both sizes may be obtained for installation on truck chassis of 84-inch cab-to-axle dimension. Increased load capacities are provided because of the new body design and increased packing ability.

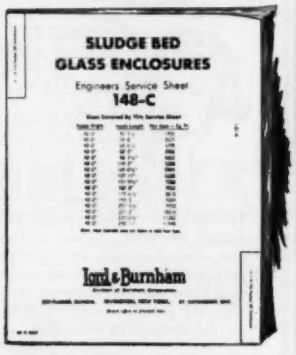
The rubbish packing panel which now holds the load in packed position during loading, is released as the bucket passes a pair of trip levers. The panel then snaps back instantly, allowing the bucket to discharge its load into the body. Size of bucket has also been increased.

Maintenance is simplified because the loading, packing, and dumping of the Pax-all Refuse Loader are all powered by one double-acting hydraulic cylinder. For further details, write to the company.

New Revised Engineers Service Sheets Now Available on

GLASS COVERS for SEWAGE TREATMENT PLANTS

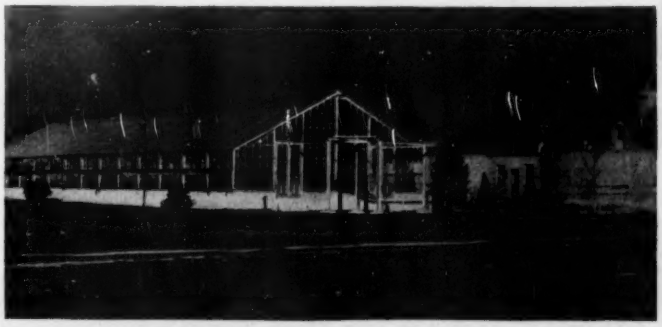
Sludge beds, sprinkling filters, tanks or wherever a glass cover is needed.



Send for These Valuable Engineers Service Sheets

New set of six Engineers Service Sheets furnished on request. Contain details, specifications and recommendations to suit individual job requirements.

Lord & Burnham
DIVISION OF BURNHAM CORPORATION
IRVINGTON, N. Y. DES PLAINES, ILL.



Typical Sludge Bed Glass Cover.

Bitumuls for Airfields

The American Bitumuls Co., 200 Bush St., San Francisco 4, Calif., records that its product, Bitumuls, emulsified asphalt, has a place in all phases of airfield pavement construction and maintenance, because its adaptability provides for more diverse usage.

Convenient to handle, Bitumuls can be unloaded into metal or wooden storage tanks, earthen pits or reservoirs, or metal drums. Mixing and placing cold Bitumuls mixtures can be done with a minimum of time, equipment, labor, and expense.

On request, the firm will send a copy of its new *Bitumuls for Aairfields* bulletin for those interested in airfield planning ,construction, paving, or maintenance. The 20-page booklet contains 36 photographs of typical installations of Bitumuls asphalt, and several types of equipment for doing the job quickly and economically.

Among the subjects discussed are: airport location and planning; mixtures for low-cost yet durable construction; surface treatments and penetration pavements, and surfacing paving mixtures.

Other topics are uses of bitumuls at airfields for general paving and maintenance, and improving private airfields.

New Truck Loader For Street Maintenance

A new truck loader, manufactured by the Ernest Holmes Co., Chattanooga, Tenn., permits the driver to load, haul, dump and do light digging, grading and cleaning up. The firm reports that its product cuts costs of street and highway maintenance, and saves in time, manpower, and equipment.

The Holmes-Owen loader can be employed for handling stock pile materials, snow removal, and many other practical uses.

The installation of a self-loader reduces the cost of such operations, for with this driver-operated unit, one man does the work of several.

Write the company for full details on its new truck loader, as well as for details on its wrecker equipment.

Heads Service Department

Henry D. Bahr has been appointed manager of the service department of the Enterprise Engine and Machinery Co., subsidiary of the General Metals Corp., 18th and Fla. Sts., San Francisco.

What Your REFINITE NEIGHBORS are doing in the...

MUNICIPAL CENTERS! THINK OF IT! 79 grain hard water at Eureka, South Dakota, softened for the entire city by REFINITE'S double unit Zeolite Water Softener. And—at Angola, Indiana, a four unit Softener and double filter equipment provided REFINITE softened water for the whole community, contributing much to health and comfort for its people. These are but two of the many towns where REFINITE has solved a tough water softening problem.

Problems in WATER TREATMENT are rightly solved when you call in the RIGHT ANSWER people. Refinite's Sales & Service Staff blankets the nation, and there is a representative close enough to give you neighborly service. Merely get in touch with Norm Tucker at Refinite in Omaha. He will have the Refinite man nearest you get the necessary details concerning your problem, and forward to the RIGHT ANSWER Service in Omaha . . . for immediate attention.

Today . . . ask the girl on the switchboard to get *Norm Tucker* of RIGHT ANSWER Service . . . Ofchard 3000 . . . Omaha. Or, write. Address: Right Answer Service, Refinite Corp., P. O. Box 1312, Omaha, Nebraska.

Refinite
WATER REFINING EQUIPMENT
OMAHA, NEBRASKA

CIRCUL-AIR
FIRE HOSE DRYER

WRITE FOR BOOKLET

Illustrates how Circul-Air saves hose, shortens drying time, prevents mildew and rot, air conditions as it dries, improves station design.

THE CIRCUL-AIR CORPORATION
575 E. Milwaukee Street
DETROIT 2 MICHIGAN

LOCATE HIDDEN VALVE BOXES, surveyor's stakes, manhole covers, septic tanks...
with the "AQUA VALVE BOX LOCATOR"
....quickly, easily, cheaply!

$29.50
F.O.B. CIN., O. with fine leather case

Thousands are used by Water Dept. and Gas Co. men and surveyors. Instant top-view periscope reading. Rubber-mounted cobalt steel dipping needle guaranteed for ten years. Accurate in ice and snow in all terrain. Also serves as a rugged accurate compass.

Time and trouble saved in finding just one valve box could pay for it. Send for complete illustrated description. Ask about 15 day FREE TRIAL.

AQUA SURVEY & INSTRUMENT CO.
2518 LESLIE AVENUE,
CINCINNATI 12, OHIO

Meter Company Made Worthington Division

The Worthington-Gamon Meter Co. of Newark, N. J., formerly a subsidiary of the Worthington Pump and Machinery Corp., Harrison, N. J., has been made a division of the corporation, according to H. C. Ramthe corporation. The new division will continue to manufacture liquid meters at the former company's Newark plant.

R. R. Anderson

Robert R. Anderson, former president of the meter firm, has been elected vice-president of the Worthington Pump and Machinery Corp., and will serve as general manager of the new division. William C. Flanders has been named assistant general manager of the division, and Walter H. Zeis, elected assistant secretary.

Precision Power Saw

The Wright Power Saw and Tool Corp., 292 Longbrook Ave., Stratford, Conn., announces a completely new approach to power sawing with its Wright precision power saw. The 14-pound saw is as accurate and easy to handle as a handsaw, but up to 20 times as fast, and operates from any 60 cubic feet or larger air compressor.

This machine drives twin reciprocating blades over a four-inch stroke at 1,500 strokes per minute. Because of the dynamic balance derived from the opposed motion of the blades, the implement is free-sawing; there is no thrust or torque during sawing.

It is especially useful for heavy timber, has no limit to its depth of cut, and its width of cut is limited only by the length of the 21-inch blades. Because of the novel tooth design, the saw is effective for crosscutting, ripping, or notching.

This precision power saw weighs 14 pounds and has 21-inch blades.

HAISS Material Handling
BUCKET LOADERS

FOUR MODELS
Load 3 to 8 Yards per min.
Self-Propelled
Self-Feeding

For loading: sand, gravel, stone, top-soil, coal, snow and similar materials. One-man operation, wheel or crawler mounted. Furnished with swivel chute or with swivel belt conveyor.

Special new features include: Sealed anti-friction bearings on head and tail shafts, two or four wheel drive, hydraulic raising and lowering, manganese or roller chain.

HAISS CONVEYORS
CAR UNLOADERS

Flat and Trough Belt Conveyors
For handling all types of loose or package materials. Mounted on "V" or mast truck with swivel wheels or for permanent installation.

UNDERCAR UNLOADERS
Designed and built especially for loading sand, gravel, and crushed stone. Combination belt and positive chain drive. Capacity up to 5 tons per minute. Ask for bulletin No. 501.

SECTIONAL CONVEYORS
Channel or Lattice Frame construction. Made in easily assembled standard sections for permanent or portable installation. All sizes and capacities available for handling all types of aggregates as well as bagged or packaged materials.

For further information write, 'phone or wire. Experienced Haiss Representatives are located in all principal cities.

George Haiss Mfg. Co., Inc. division of Pettibone Mulliken Corp.
141st to 144th St. on Park Ave., New York 51, N. Y. 'Phone Mott Haven 5-2200
4700 W. Division St., Chicago 51, Ill. 'Phone Spaulding 2-9500

NEW YORK CHICAGO CEDAR RAPIDS

Discussing plans for their new advertising agency are (left to right): R. S. Reed, Jr., E. A. Gebhardt, and W. A. Marsteller.

Marsteller, Gebhardt & Reed Form Advertising Agency

Effective May 1, an advertising agency, to be known as Marsteller, Gebhardt & Reed, Inc., will begin operations, combining the 33-year-old Chicago agency of Gebhardt & Brockson, Inc., and the Pittsburgh office of The McCarty Co. The new firm will be headed by E. A. Gebhardt, chairman of the board; William A. Marsteller, president, and R. S. Reed, Jr., executive vice-president and manager of the Pittsburgh office.

Other officials will include: Lewis M. Williams, executive vice-president in charge in the Chicago office; Fred B. Livingston, vice-president and art director, and Harry Neal Baum, vice-president. Account executives are Lucien M. Brouillette, John R. Burke, George A. Piper, John F. Conners, J. W. Evans, and Ambrose L. Duggan.

The company will maintain offices at 600 S. Michigan Ave., Chicago, and at 600 Grant St., Pittsburgh.

Accounts now handled by Gebhardt & Brockson, Inc., and by the Pittsburgh office of The McCarty Co., will continue with the new agency organization, which will also take over the advertising of all divisions of the Rockwell Mfg. Co. of Pittsburgh.

Mark Owen Joins Nichols Engineering

Mark B. Owen has closed his consulting engineering practice to rejoin the Nichols Engineering and Research Corp., 70 Pine St., New York 5, N. Y. His position will be vice-president in charge of sewage sludge incineration.

Mr. Owen is a former director of Public Works of Dearborn, Mich. Later, he joined the Nichols organization, and left it during the war to accept an assignment from the American Society of Civil Engineers. After completing this work, he formed a partnership with Russell B. Moore, Indianapolis, Ind., consulting engineer, in the firm name of Moore and Owen. Later, he organized a consulting engineering firm in his own name.

Mr. Owen will continue to be located in Indianapolis at 1920 N. Meridian St., Indianapolis 2, Ind.

Retires as President

H. Seaver Jones, who has been associated with the development of the Centriline Process almost from its inception 20 years ago, has retired as president and director of the Centriline Corp., 140 Cedar St., New York 6, N. Y. James P. Cummins, formerly East coast general superintendent of the Raymond Concrete Pile Co., has been named president.

Centriline was formed in 1939 to take over the process invented by A. G. Perkins and developed by the T. A. Gillespie Co. Under Mr. Jones' administration, great progress has been made in developing the application of cement lining for pipes from 4 inches to 144 inches in diameter. Mr. Jones will continue to serve as consultant for the company.

Under Mr. Jones' direction, the company has applied cement lining to concrete pipe in water systems throughout the entire world. The process enables the pipe to increase its flow capacity.

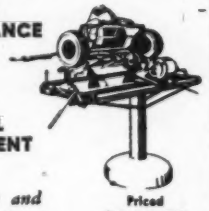
THE MODERN LAWN MOWER SHARPENER

CUTS MAINTENANCE COSTS

•

LOWER CAPITAL INVESTMENT

•



Economically and Quickly Sharpens All Municipal Mowers

Priced $241.50 (less motor)

Sharpens All Reel Type Mowers • Hand, Power or Gang • 10 to 20 Minutes • No Dismantling No Extra Attachments Needed

All reel type mowers, from 5-inch edgers to 36 inch power mowers, are quickly sharpened to extreme ends of both left and right twist reel blades. Handle, wheels, roller and motor repair in place when sharpening is in process. Bed knife is sharpened in same brackets that hold mower in grinding position. No extra attachments required. One lever puts mower or bed knife in grinding position. 100% steel construction. Grinding head rides on five ball bearing races. Small, compact, easy to operate. Sharpens wood chisels, jointer knives and planer blades without extra attachments. Skate Sharpener Attachments available.

1/3-hp. G.E. 60-cycle Motors now available—$21.50 extra.

Send for Free Bulletin No. 258

ORDER NOW • IMMEDIATE DELIVERY

MODERN MFG. CO.

160 N. FAIR OAKS AVE. • PASADENA 1, CALIF.

Manufacturers Representative:

Sewer Cleaning Machinery Valuable Territory Openings

Please state lines you now handle, territory covered and your method of operating.

Address inquiry to

Box No. 341
The American City Magazine
1719 Daily News Bldg.
Chicago 6, Ill.

New Motor Grader

The J. D. Adams Mfg. Co., Indianapolis, Ind., announces production of its new 70-hp International diesel-powered motor grader No. 312. The machine, photographed above, carries 12,800 pounds on its rear wheels and has a 70-hp engine. A news story describing the motor grader appeared on page 197 of the February issue.

Vinyl Plastic Coatings

An illustrated and documented bulletin on vinyl plastic coatings has been issued by the manufacturer, the Casey and Case Coating Co., P. O. Box 151, Maywood, Calif. These coatings are used to control corrosion on exteriors of steel, concrete, brick, formed block and plywood structures, and as a tank lining.

The publication gives specific properties, contains a chemical resistance chart, and lists information concerning application.

Coatings are of thermoplastic resin base and are non-contaminating so that they may be used in constant contact with delicate food processing. They also are tough enough for use on railroad tank cars or sea-going barges.

The bulletin will be supplied on request made on letterhead of any interested user.

Rotary Masonry Drill

The Concrete Termite Drill Co., 2084 Foothill Boulevard, Pasadena 8, Calif., manufacturer of concrete drills, offers its Termite rotary masonry drills in special lengths of 12, 18, 24, and 36-inches. These drills, recommended for use in drilling large number of holes in concrete, are available in these extra lengths in diameters of ¼, ⅜, ½, ⅝ and ¾-inches. They are approximately 50 percent worm.

The Core Termites, which have a hollow construction and are employed for drilling large-diameter holes, can be obtained in the extra length sizes in diameters from ⅞ to 5-inches.

The firm reports that an important feature of Concrete Termites and Core Termites is the scientifically-designed worm which withdraws the pulverized residue from the hole, resulting in faster and easier drilling of cleaner holes. The cutting inserts used on the Termite line are made of a material composed of a vacuum sintered tungsten titanium carbide which give the drills longer wear, faster penetrating qualities.

Named Chief Engineer

The appointment of Ernest S. Theiss as chief engineer of the Davey Compressor Co., Kent, Ohio, has been reported by Paul H. Davey, president. Assistant chief engineer for the past six months, Mr. Theiss succeeds W. W. Warner, recently named company vice-president.

Mr. Theiss is chairman of the Akron, Ohio, section of the American Society of Mechanical Engineers. He holds membership in the National Society of Professional Engineers, American Society of Heating and Ventilating Engineers, and the American Society for Engineering Education.

Standby Emergency Power In U. S. Hospitals

Power Points, a two-color magazine published by D. W. Onan & Sons, Inc., Minneapolis 5, Minn., describes how hospitals throughout the United States are installing Onan standby electric generating plants for protection against electric power failures.

Included with pertinent data and text are photographs of hospitals in all sections of the country from Oklahoma to Massachusetts.

When writing for your free copy of *Power Points*, ask for Volume 6, Number 3.

HERE
HERE
HERE
Here's where savings start
Save on man-hour costs and expensive lumber
Complete each job faster and get better quality finished work
Use the same forms over and over for a wide variety of jobs

with BLAW-KNOX
STEEL CURB and GUTTER FORMS

FOR simple straight work or curved shapes, Blaw-Knox Curb and Gutter Forms save money on every job. Easy to set and strip, they complete the job faster and well within your estimate. Costly hand finishing is eliminated. You not only save on materials but finished jobs have a perfection impossible to achieve with wood forms. Maintenance is practically non-existent.

Start your set of Blaw-Knox Steel Forms *now* —expand at any time for future requirements.

WRITE FOR BULLETIN 2259 —28 pages illustrate form setups for every type of work, with complete instructions on how to use them.

CURB AND GUTTER FORMS. For combined concrete curb and gutter when curb is battered.

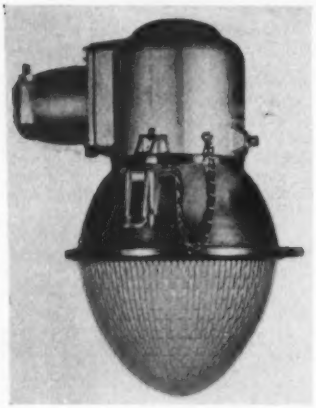
STRAIGHT CURB FORMS. For curb with both faces vertical. Auxiliary bracing system for lateral stability.

SIDEWALK FORMS. Furnished for any required width or thickness of sidewalk.

FLEXIBLE STEEL RADIUS FORMS. For curved work of variable radius. Back forms, gutter forms and battered curb face forms can be set to any desired radius.

BLAW-KNOX
BLAW-KNOX DIVISION of Blaw-Knox Company
2009 Farmers Bank Bldg., Pittsburgh 22, Pa.
New York • Chicago • Philadelphia • Birmingham • Washington • San Francisco

New Street-Lighting Luminaire



A new type AK-6 enclosed street-lighting luminaire for residential, rural, and suburban areas (1,000- and 2,500-lumen lamps), is available from the Westinghouse Electric Corp., P. O. Box 2099, Pittsburgh 30, Pa. Variations permit top or side mounting, inner or outer wiring, and high- or low-voltage multiple circuits.

Allis-Chalmers President

William A. Roberts was elected president of the Allis-Chalmers Mfg. Co., Milwaukee 1, Wis., at a special meeting of the board of directors. Since 1947, he has been executive vice-president in charge of the tractor division.

Mr. Roberts succeeds the late Walter Geist, 56, who was president from May, 1943, until he died of a heart ailment on January 29.

The board also elected four new vice-presidents and made other organization changes.

Executive vice-president for the entire company is W. C. Johnson, formerly executive vice-president in charge of the general machinery division.

Vice-presidents of the general machinery division include: J. L. Singleton, former vice-president and sales director of this unit, now in charge of the division, and Fred Mackey, former general works manager, now in charge of manufacturing.

Tractor division changes include: R. S. Stevenson, former general sales manager, who now is vice-president in charge of the group; A. W. Van Hercke, vice-president in charge of engineering, who has been director of engineering, and John Ernst, vice-president in charge of manufacturing, former general works manager.

Mr. Roberts joined Allis-Chalmers as a salesman in 1924 and later became Canadian sales representative. In the early 1930's he supervised the introduction of the use of rubber tires on wheel tractors and on other farm equipment. Mr. Roberts was president of the Farm Equipment Institute. He is a regional vice-president of the American Road Builders Association, a director of the National Safety Council, and holds membership in the American Society of Agricultural Engineers, American Ordnance Association, and the Newcomen Society of North America.

Mr. Johnson, joined the firm as a machinist's helper in 1924, and in 1947 became executive vice-president in charge of the general machinery division. While he headed this group, his firm developed such Allis-Chalmers products as the betratron for commercial use, the mechanical kidney, and the world's first coal burning gas turbine for a locomotive.

Mr. Johnson, a director of the National Industrial Conference Board, is a past president of the National Electrical Manufacturers Association. He represents Wisconsin as a director of the National Association of Manufacturers.

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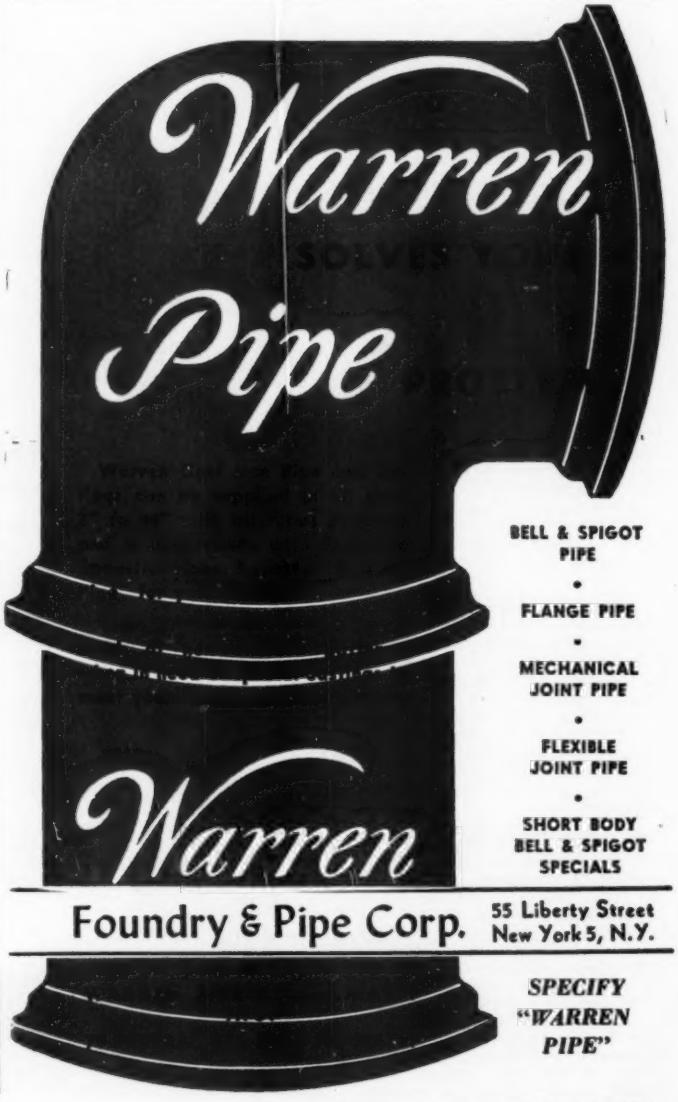

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Aero Service Corp. 54
Aeroil Products Co., Inc. 48
Allis-Chalmers Tractor Div. 80, 81
Ambulatory Splint Co. 167
Amercoat Corp. 47
American Bitumuls Co. 49
American Cast Iron Pipe Co. 36
American Concrete Corp. 138
American Pipe and Construction Co. 47
American Radiator & Std. Sanitary Corp. 35
American Tel. & Tel. Co. 4
Amplex Corp. 188
Anthracite Equipment Corp. 176
Aqua Survey and Instrument Co. 206
Armco Drainage & Metals Products, Inc. 172
Associated General Contractors of America, Inc. 59
Austin-Western Co. 57
Automatic Voting Machine Corp. 60

B & B Engineering Corp. 211
Badger Meter Mfg. Co. 63
Barber-Greene Co. 32, 33
Barrett Div., Allied Chemical & Dye Corp. 56
Baughman Mfg. Co. 195
Bead Chain Mfg. Co. 183
Bennett Mfg. Co. 194
Bethlehem Steel Co. 174
Black & Veatch 211
Blaw-Knox Div. 209
Boyce Co., Inc. 175
Braxmar Co., Inc., C. G. 204
Briegel Co., Inc., C. G. 211
Briggs & Stratton Corp. 159
Buck, Seifert & Jost 211
Bucyrus-Erie Hydrocrane Div. 125
Buffalo Meter Co. 78
Buffalo Pipe & Foundry Corp. 176
Builders-Providence, Inc. 46
Burgess & Nipple 211
Burke Co., J. E. 74
Burns & McDonnell Engineering Co. 211
Burroughs Adding Machine Co. 170
Byron Jackson Co. 27

Caisson Wells, Inc. 180
Cast Iron Soil Pipe Institute 68
Caterpillar Tractor Co. 30, 31
Champion Corp. 44
Chapman Valve Mfg. Co. 43
Chicago Bridge & Iron Co. 10
Circul-Air Corp. 206
Cleminshaw Co., J. M. 155, 212
Clow & Sons, James B. 120, 187
Cole-Layer-Trumble Co. 212
Coleman Cable & Wire Corp. 202
Cole Mfg. Co., R. D. 74
Colorado Fuel and Iron Corp., Wickwire Spencer Steel Div. 44
Concrete Sawing Equipment, Inc. 198
Connelly, Inc. 186
Connery Construction Co. 46
Consoer, Townsend & Associates 212
Consulting Engineers 211-217
Conveyor Company 171
Cooper-Bessemer Corp. 58
Cooper Mfg. Co. 48
Crouse-Hinds Co. 150
Cyclone Fence Div. 173

Damon & Foster 212
De Leuw, Cather & Co. 212
Dempster Brothers, Inc. 76
Detrick, Walter 212
Detectron Co. 179
Dickinson Co., Albert 48
Dingman, Charles F. 212
Dolge C., The C. B. 50
Dresser Mfg. Div. 122
Dual Parking Meter Co. 136
Duncan Parking Meter Corp. 152

Eckenfelder Associates 213
Eddy Valve Co. 187
Edwards, Kelcey and Beck 213
Electrical Testing Laboratories, Inc. 213
Embury Mfg. Co. 179
Expanding Sewer Machine Co. 190

Farquhar Co., A. B. 202
Fairchild Aerial Surveys, Inc. 148, 213
Federal Enterprises, Inc. 51

Fisher Research Laboratory, Inc. 42
Fitzgerald Engineering Co., Inc. 180
Flexible Sewer-Rod Equip. Co. 62
Flexible Underground Pipe-Cleaning Co. 62
Flood & Co., Walter H. 213
Ford, Bacon & Davis 213
Ford Meter Box Co. 157

Gamewell Co. 16
Gannett, Fleming, Corddry & Carpenter 213
General Electric Co. 41, 134, 146
Gerrard & Co., A. J. 182
Giant Mfg. Co. 52
Goldak Co. 50, 186
Good Roads Machinery Co. 53
Gorman-Rupp Co. 52
Gravely Motor Plow & Cultivator Co. 62
Griffenhagen & Associates 214
Griffith, L. B. 214
Gunite Concrete & Construction Co. 42

Haberman Industries, Inc. 18
Haiss Mfg. Co., Inc., George 42, 207
Halsey, Stuart & Co., Inc. 191
Harley-Davidson Motor Co. 164
Harris, Robert Bruce 214
Hays Mfg. Co. 153
Heilige, Inc. 199
Homelite Corp. 156
Horan Co., George B. 214
Hotpoint, Inc. 37
Hubbard and Co. 154
Hyatt, Chauncey A. 214
Hydrauger Corp., Ltd. 182
Hyster Co. 6

Industrial Waste Consultants 214
Infilco, Inc. 14
International Harvester Co. 75
Iowa Valve Co. 120

Jacobs & Co., J. L. 214
Jaeger Machine Co. 187
Johnson Steel & Wire Co. 188
Joslyn Mfg. and Supply Co. 140

Karpark Corp. 72
Kelly-Creswell Co. 175
Kennedy Valve Mfg. Co. 181
Kennedy, Clyde Co. 214
Koehring Co. 38
Kwik-Mix Co. 38

Lake Shore Markers Div. 52
Lawter Chemicals, Inc. 199
Layne & Bowler, Inc. 12
Lazarus Co., Arthur 215
Leadite Co. 50
Leaf Loader Div., American Structural Steel & Tank Co. 155
Leece-Neville Co. 184
Le Roi Company 66, 67
Le Tourneau, Inc., R. G. 189
Lincoln Hotel 60
Littleford Bros., Inc. 74
Lock Joint Pipe Co. 77
Lord & Burnham, Div. of Burnham Corp. 205
Lull Mfg. Co. 119

Mack Mfg. Corp. 55
Magee-Hale Park-O-Meter Corp. 158
McDonald Mfg. Co., A. Y. 160
McGraw-Hill Book Co. 176
McWane Cast Iron Pipe Co. 151
Meierjohan-Wengler 52
Meill-Blumberg Corp. 24
Metcalf Bros. & Co. 44
Metcalf & Eddy 215
Mi-Co Meters 144
Miro-Flex Co. 185
Modern Mfg. Co. 208
Motorola, Inc. 162
Muddeman & Assoc., John M. 215
Murdock Mfg. and Supply Co. 186

National Clay Pipe Mfrs., Inc. 45
National City Pipe Mfrs., Inc. 45
National Supply Co., Engine Div. 61
National Tube Co. 128

Neptune Meter Co. 82
Netco Div., Clark-Wilcox Co. 185
Nichols Engineering & Res. Corp. 190
Nordberg Mfg. Co. 166
Northern Gravel Co. 72
Nussbaumer, Clarke and Velzey, Inc. 215
Nutting Co., H. C. 215

Oliver Corp. 69
Oren Roanoke Corp. 197

Pacific Flush Tank Co. 190
Palmer and Baker, Inc. 216
Palmer Filter Equipment Co. 182
Parsons Co. 39
Parsons, Brinckerhoff, Hall & Macdonald 216
Pathfinder Co. 188
Permutit Co. 126
Pfeifer & Shultz 216
Phelan-Faust Paint Mfg. Co. 202
Philadelphia Textile Finishers, Inc. 62
Pitometer Co. 216
Pittsburgh Coke and Chemical Co. 200
Pittsburgh-Des Moines Steel Co. 178
Pittsburgh Testing Laboratory 216
Pleydell Assoc., Inc., Albert 216
Potts, Clyde 216
Premax Products Div. 204
Pressure Concrete Co. 48
Prismo Safety Corp. 132

RCA Engineering Products 192
Refinite Corp. 206
Revere Electric Mfg. Co. 201
Rhodes, Inc., M. H. 219
Ric-wiL Co. 46
Robert & Co. Associates 216
Rockwell Mfg. Co. 73
Ross Valve Mfg. Co., Inc. 171
Russell & Axon 216
Ryerson & Co., Inc., Joseph T. 116

Sanitary Engineers 211, 217
Schield Bantam Co. 161
Scott Aviation Corp. 34
Seelye, Stevenson & Value 217
Sherman Products, Inc. 46
Simplex Valve & Meter Co. 177
Skinner Co., M. B. 8
Skyline Corp. 204
Smith Co., Gordon 179
Snyder, McClellan, Miller & Watson 217
Soisson Associates 217
Solvay Sales Div. 70
Southern Signals, Inc. 42
Southwest Engineers 217
Sparling Meter Co. 198
Stancal Asphalt & Bitumuls Co. 49
Standard Steel Works 193
Stellwagon, Robert H. 217
Stillson & Assoc., Ltd., Alden E. 217
Sweet Co., H. C. 182

Tarrant Mfg. Co. 163
Tec Industries, Inc. 186
Texas Company 2, 22
Toledo Pipe Threading Machine Co. 180
Toledo Testing Laboratory 217
Topf, S. B. 217
Tubular Specialty Mfg. Co. 187

Underwood Corp. 130
Union Metal Mfg. Co. 130
United Laboratories, Inc. 169
U. S. Pipe & Foundry Co. 65
U. S. Steel Subsidiary 128, 173
U. S. Testing Co., Inc. 217

Wald Industries, Inc. 20
Wallace & Tiernan Co., Inc. 79, 220
Warren Foundry Co., Inc. 210
Westinghouse Electric Corp. 28, 143
White Mfg. Co. 72
Wickwire Spencer Steel Div. of The Colorado Fuel & Iron Corp. 44
Wilkinson Products Co. 60
Wilshire Power Sweeper Co. 29
Wood Co., R. D. 40
Worthington-Gamon Meter Div. 50
Worthington Mower Co. 71
Worthington Pump & Machinery Corp. 64, 168

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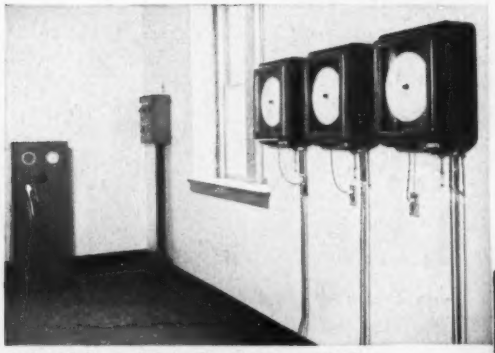

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